TriangleTube

prestige

Excellence

Water Boiler

Part 1 of 2

INSTALLATION AND MAINTENANCE

NOTICE

Warranty Registration Card must be filled out by the customer and mailed within thirty (30) days of installation in order to gain warranty coverage.

When receiving the PRESTIGE Excellence unit, any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

Leave all documentation received with appliance with owner for future reference.

⚠ WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

FOR YOUR SAFETY

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- WHAT TO DO IF YOU SMELL GAS
  - Do not try to light any appliance
  - Do not touch any electrical switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

WARNING **WARNING**

This manual outlines the requirements for installation of the PRESTIGE Excellence. Those requirements include Boiler Piping, Venting/Combustion Air, Start-Up and Maintenance.

- **For detailed instructions regarding the installation of the vent/combustion air system reference the PRESTIGE Vent Supplement and/or the various optional vent kit instructions.**
- **For instructions regarding the PRESTIGE Excellence Domestic Water Heater Installation requirements and piping, reference the PRESTIGE Excellence Indirect Water Heater Manual beginning after page 70 of PRESTIGE Excellence Water Boiler Manual.**

The PRESTIGE Vent Supplement is included in the unit's installation envelope. For instructions or information regarding the various optional vent kits contact the Engineering Department at Triangle Tube.

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TriangleTube

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Definitions

The following terms are used throughout this manual to bring attention to the presence of potential hazards or important information concerning the product.

⚠ DANGER

Indicates the presence of a hazardous situation which, if ignored, will result in death, serious injury or substantial property damage.

⚠ WARNING

Indicates a potentially hazardous situation which, if ignored, can result in death, serious injury or substantial property damage.

⚠ CAUTION

Indicates a potentially hazardous situation which, if ignored, may result in minor injury or property damage.

NOTICE

Indicates special instructions on installation, operation or maintenance, which are important to equipment but not related to personal injury hazards.

BEST PRACTICE

Indicates recommendations made by Triangle Tube for the installers which will help to ensure optimum operation and longevity of the equipment

NOTICE

Triangle Tube reserves the right to modify the technical specifications and components of its products without prior notice.

⚠ DANGER

Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system which has been under water.

⚠ WARNING

WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

⚠ WARNING

Should overheating occur or the gas supply fails to shut off, turn OFF the manual gas control valve external to the appliance.

⚠ WARNING

DO NOT add cold make up water when the boiler is hot. Thermal shock can cause potential cracks in the heat exchanger.

⚠ CAUTION

When servicing the boiler:

- **Avoid electrical shock by disconnecting the electrical supply prior to performing maintenance.**

⚠ WARNING

Qualified Installer:

Prior to installing this product read all instructions included in this manual and all accompanying manuals/documents with this appliance. Perform all installation steps required in these manuals in the proper order given. Failure to adhere to the guidelines within these manuals can result in severe personal injury, death or substantial property damage.

Homeowner:

- This product should be maintained / serviced and inspected annually by a qualified service technician.
- This manual is intended for use by a qualified Installer/Service Technician.

NOTICE

Please reference the unit's model number and the serial number from the rating label on the backside of the control panel when inquiring about service or troubleshooting.

NOTICE

Triangle Tube accepts no liability for any damage resulting from incorrect installation or from the use of components or fittings not specified by Triangle Tube.

SECTION I - Pre-Installation Items

Code Compliance

This product must be installed in accordance to the following:

- All applicable local, state, national and provincial codes, ordinances, regulations and laws.
- For installations in Massachusetts - code requires the boiler to be installed by a licensed plumber or gas fitter, and if antifreeze is utilized, the installation of a reduced pressure backflow preventer device is required in the boiler's cold water fill or make up water supply line.
- For installation in Massachusetts

  All direct vented appliances must comply with the guidelines as outlined on page 11.
- The National Fuel Gas Code NFPA54/ ANSI Z 223.1 - Latest edition.
- National Electric Code ANSI/NFPA 70.
- For installations in Canada -"Installation Code for Gas Burning Equipment" CGA/B149.1 or B149.2 Canadian Electrical Code Part 1 CSA C22.1.
- Standards for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1, when required.

NOTICE

The PRESTIGE Excellence boiler gas manifold and gas controls meet the safe lighting and other performance requirements as specified in ANSI Z21.13 latest edition.

Determining Product Location

Before locating the PRESTIGE Excellence check for convenient locations to:

- Heating system piping
- Venting
- Gas supply piping
- Electrical service

Ensure the boiler location allows the combustion air/vent piping to be routed directly through the building and terminate properly outside with a minimum amount of length and bends.

Ensure the area chosen for the installation of the PRESTIGE Excellence is free of any combustible materials, gasoline and other flammable liquids.

⚠ WARNING

Failure to remove or maintain the area free of combustible materials, gasoline and other flammable liquids or vapors can result in severe personal injury, death or substantial property damage.

Ensure the PRESTIGE Excellence and its controls are protected from dripping or spraying water during normal operation or service.

The PRESTIGE Excellence should be installed in a location so that any water leaking from the boiler or piping connections or relief valve will not cause damage to the area surrounding the unit or any lower floors in the structure.

Boiler Replacement

If the PRESTIGE Excellence is replacing an existing boiler, the following items should be checked and corrected prior to installation:

- Boiler piping leaks and corrosion.
- Improper location and sizing of the expansion tank on the boiler heating loop.
- If applicable, level and quality of freeze protection within the boiler system.

Recommended Clearances

The PRESTIGE Excellence is approved for zero clearance to combustibles, excluding vent and boiler piping.

- Vent & Boiler Piping - 1/4 inch from combustible materials.

BEST PRACTICE

To provide serviceability to the unit it is recommended that the following clearances be maintained:

Top boiler jacket - 24 inches.

Front - 24 inches.

Bottom boiler piping - 24 inches.

Rear - 0 inches

Sides - 6 inches

⚠ WARNING

If the clearances listed above cannot be maintained or the enclosure in which the boiler is installed is less than 85 cubic feet, the space must be ventilated. See page 6 for ventilation requirements.

NOTICE

When maintaining zero clearance or less than recommended clearances, some product labeling may become hidden and unreadable

⚠ WARNING

When installing the PRESTIGE Excellence in a confined space, sufficient air must be provided for proper combustion and venting and to allow, under normal operating conditions, proper air flow around the product to maintain ambient temperatures within safe limits to comply with the National Fuel Gas Code NFPA 54 - latest edition.

Residential Garage Installations

When installing the PRESTIGE Excellence in a residential garage, the following special precautions per NFPA 54/ANSI Z223.1 must be taken:

- Mount the unit with a minimum 18 inches above the floor level of the garage. Ensure the burner and ignition devices / controls are no less than 18 inches above the floor level.
- Locate or protect the unit in a matter so it cannot be damaged by a moving vehicle.

Boiler Freeze Protection Feature

The boiler control has an freeze protection feature built in. This feature monitors the boiler temperature and responds as follows when no call for heat is present:

- 46ºF Boiler circulator is ON
- 38ºF Boiler circulator is ON and burner operates at low fire
- 50ºF Burner OFF and boiler circulator operates for approximately 10 minutes

⚠ CAUTION

The boiler freeze protection feature is disabled during a hard lockout, however the CH circulator will operate and the 3-way valve will open to the CH system.

⚠ CAUTION

The boiler freeze protection feature is designed to protect the boiler and should be installed in a primary/secondary piping arrangement. If it is installed in an unheated space or exposed to water temperatures of 46ºF or less, see Section IV for primary/secondary piping examples. See Section IX for antifreeze guidelines.

SECTION II - Combustion Air and Venting

Combustion Air Contamination

⚠ WARNING

If the PRESTIGE Excellence combustion air inlet is located in any area likely to cause or contain contamination, or if products, which would contaminate the air cannot be removed, the combustion air must be repiped and terminated to another location. Contaminated combustion air will damage the unit and its burner system, resulting in possible severe personal injury, death or substantial property damage.

⚠ WARNING

Do not operate a PRESTIGE Excellence if its combustion air inlet is located near a laundry room or pool facility. These areas will always contain hazardous contaminants.

Pool and laundry products and common household and hobby products often contain fluorine or chlorine compounds. When these chemicals pass through the burner and vent system, they can form strong acids. These acids can create corrosion of the heat exchanger, burner components and vent system, causing serious damage and presenting a possible threat of flue gas spillage or water leakage into the surrounding area.

Please read the information listed below. If contaminating chemicals are located near the area of the combustion air inlet, the installer should pipe the combustion air inlet to an outside area free of these chemicals per SECTION V of this installation manual.

Potential contaminating products

- Spray cans containing chloro/fluorocarbons
- Permanent Wave Solutions
- Chlorinated wax
- Chlorine - based swimming pool chemicals / cleaners
- Calcium Chloride used for thawing ice
- Sodium Chloride used for water softening
- Refrigerant leaks
- Paint or varnish removers
- Hydrochloric acid / muriatic acid
- Cements and glues
- Antistatic fabric softeners used in clothe dryers
- Chlorine-type bleaches, detergents, and cleaning solvents found in household laundry rooms
- Adhesives used to fasten building products and other similar products

Areas likely to contain these products

- Dry cleaning / laundry areas and establishments
- Beauty salons
- Metal fabrication shops
- Swimming pools and health spas
- Refrigeration Repair shops
- Photo processing plants
- Auto body shops
- Plastic manufacturing plants
- Furniture refinishing areas and establishments
- New building construction
- Remodeling areas
- Garages with workshops

Ventilation and Combustion Air Requirements - Direct Vent

A Direct Vent appliance utilizes uncontaminated outdoor air (piped directly to the appliance) for combustion)

For Direct Vent installations, involving only the PRESTIGE Excellence, in which the minimum service clearances are maintained as listed on page 4, no ventilation openings are required.

For Direct Vent, zero service clearance installations involving only the PRESTIGE Excellence, the space / enclosure must provide two openings for ventilation. The openings must be sized to provide 1 square inch of free area per 1,000 BTUH of boiler input. The openings shall be placed 12 inches from the top of the space and 12 inches from the floor of the space.

For installations in which the PRESTIGE Excellence shares the space with air movers (exhaust fan, clothes dryers, fireplaces, etc.) and other combustion equipment (gas or oil) the space must be provided with adequate air openings to provide ventilation and combustion air to the equipment. To properly size the ventilation / combustion air openings, the installer must comply with the National Fuel Gas Code NFPA 54, ANSI Z223.1 for installations in the U.S or CSA B149.1 and B149.2 for installations in Canada.

⚠ WARNING

The space must be provided with ventilation / combustion air openings properly sized for all make-up air requirements (exhaust fans, clothes dryers, fireplaces, etc.) and the total input of all appliances located in the same space as the PRESTIGE Excellence, excluding the input of a Direct Vent PRESTIGE Excellence which uses combustion air directly from the outside, thus additional free area for the openings is not required. Failure to provide or properly size the openings could result in severe personal injury, death or substantial property damage.

Ventilation and Combustion Air Requirements - Category IV

A Category IV appliance utilizes uncontaminated indoor or outdoor air (surrounding the appliance) for combustion.

BEST PRACTICE

In order to reduce the potential risks associated with indoor contaminates (listed on page 5), flammable vapors and tight housing construction (little or no infiltration air), it is recommended to pipe uncontaminated combustion air directly from the outdoors to the appliance. This practice also promotes higher system efficiency by reducing heated indoor air from being exhausted from the house and replaced by cold infiltration air into the house.

For installations in which the PRESTIGE Excellence shares the space with air movers (exhaust fan, clothes dryers, fireplaces, etc.) and other combustion equipment (gas or oil) the space must be provided with adequate air openings to provide ventilation and combustion air to the equipment. To properly size the ventilation / combustion air openings, the installer must comply with the National Fuel Gas Code NFPA 54, ANSI Z223.1 for installations in the U.S or CSA B149.1 and B149.2 for installations in Canada, as referenced in this section of the manual and titled Methods of Accessing Combustion Air into a Space.

⚠ WARNING

The space must be provided with ventilation / combustion air openings properly sized for all make-up air requirements (exhaust fans, clothes dryers, fireplaces, etc.) and the total input of all appliances, including the PRESTIGE Excellence when located in the same space as the PRESTIGE Excellence. Failure to provide or properly size the openings could result in severe personal injury, death or substantial property damage.

Methods of Accessing Combustion Air Into A Space - Category IV

Indoor Combustion Air

NOTICE

The methods listed in this section for accessing Indoor Combustion Air assume that the infiltration rate is adequate and not less than .40 ACH. For infiltration rates less than .40 ACH, reference the NFPA 54 National Fuel Gas Code for additional guidance.

Opening Size and Location

Openings used to connect indoor spaces shall be sized and located in accordance with the following. See Fig. 1:

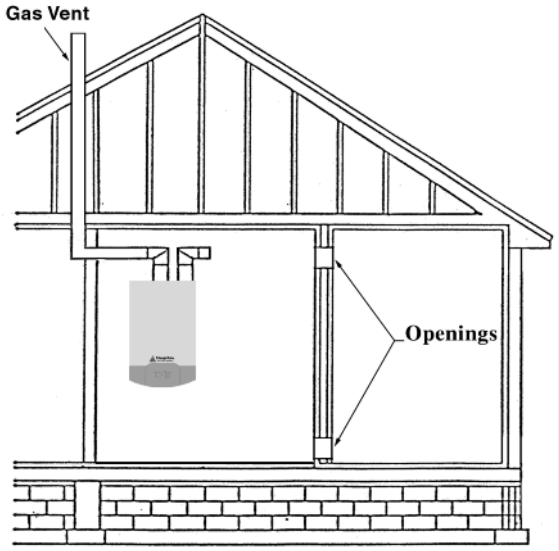


Fig. 1: All Combustion Air from Adjacent Indoor Spaces Through Indoor Combustion Openings

- Combining spaces on the same story. Each opening shall have a minimum free area of 1 sq. in./1000 Btu/hr of the total input rating of all gas utilization equipment in the space, but not less than 100 sq. inches. One opening shall commence within 12 inches of the top, and one opening shall commence within 12 inches of the bottom of the enclosure. The minimum dimension of air openings shall be not less than 3 inches.
- Combining spaces in different stories. The volumes of spaces in different stories shall be considered as communicating spaces where such spaces are connected by one or more openings in doors or floors having a total minimum free area of 2 sq. in./1000 Btu/hr of total input rating of all gas utilization equipment.

Outdoor Combustion Air

BEST PRACTICE

Isolating the combustion appliance room from the rest of the building and bringing in uncontaminated outside air for combustion and ventilation is always preferred.

Opening Size and Location

The minimum dimension of air openings shall be not less than 3 inches

Openings used to supply combustion and ventilation air shall be sized and located in accordance with the following:

One Permanent Opening Method. See Fig. 2

One permanent opening, commencing within 12 in. of the top of the enclosure, shall be provided. The equipment shall have clearances of at least 1 inch from the sides and 6 in. from the front of the appliance. The opening shall directly communicate with the outdoors or shall communicate through a vertical or horizontal duct to the outdoors or spaces that freely communicate with the outdoors and shall have a minimum free area of the following:

- 1sq. in./3000 Btu/hr of the total input rating of all equipment located in the enclosures, and

- Not less than the sum of the areas of all vent connectors in the space.

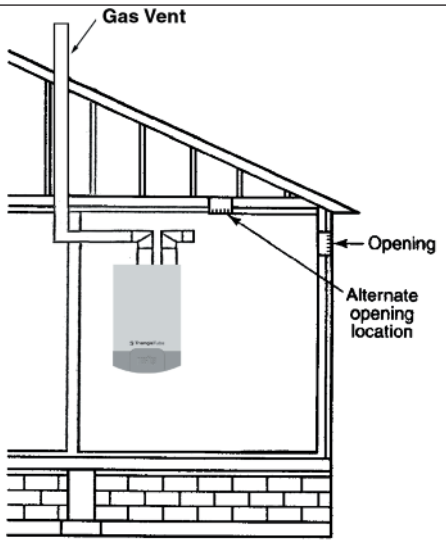


Fig. 2: All Combustion Air from Outdoors Through One Permanent Air Opening

Two Permanent Openings Method.

Two permanent openings, one commencing within 12 in. of the top and one commencing within 12 in. of the bottom of the enclosure, shall be provided. The openings shall communicate directly, or by ducts, with the outdoors or spaces that freely communicate with the outdoors, as follows:

- Where directly communicating with the outdoors or where communication to the outdoors is through vertical ducts, each opening shall have a minimum free area of 1 sq. in./4000 Btu/hr of total input rating of all equipment in the enclosure. See Fig.3.
- Where communicating with the outdoors is through horizontal ducts, each opening shall have a minimum free area of not less than 1 sq.in./2000 Btu/hr of total input rating of all equipment in the enclosure. See Fig. 4.

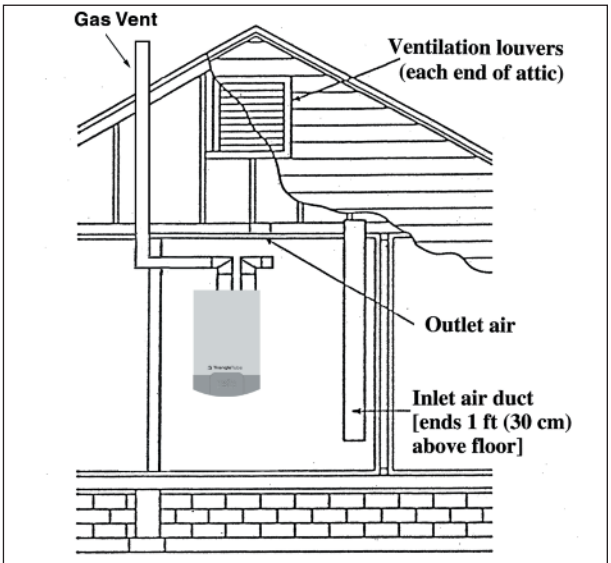


Fig. 3: All Combustion Air from Outdoors Through Ventilated Attic

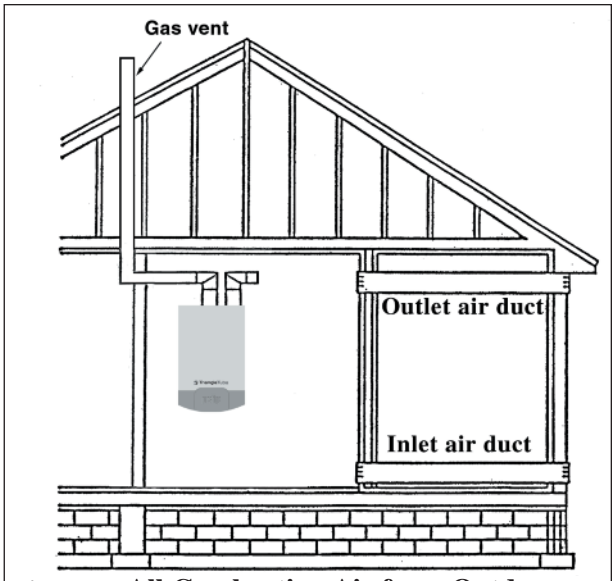


Fig. 4: All Combustion Air from Outdoors through Horizontal Ducts

Combination of Indoor and Outdoor Combustion Air

Indoor Openings: Where used, openings connecting the interior spaces shall comply with the Indoor Combustion Air section on page 7.

Outdoor Opening(s) Location. Outdoor opening(s) shall be located in accordance with the Outdoor Combustion Air section.

Outdoor Opening(s) Size. Outdoor opening(s) shall be calculated in accordance with the following:

- The ratio of the interior spaces shall be the available volume of all communicating spaces divided by the required volume.
- The outdoor size reduction factor shall be 1 minus the ratio of interior spaces.
- The minimum size of outdoor opening(s) calculated in accordance with the above outdoor air section multiplied by the reduction factor. The minimum dimension of air openings shall not be less than 3 in.

⚠ DANGER

Do not install the PRESTIGE Excellence into a common vent with other gas or oil appliances. This may cause flue gas spillage or appliance malfunction, resulting in possible severe personal injury, death or substantial property damage.

Combustion Air and Vent Piping

The PRESTIGE Excellence requires a Category IV venting system, which is designed for pressurized venting and condensate.

The PRESTIGE Excellence is certified per ANSI Z21.13 as a Category IV or Direct Vent (sealed combustion) appliance. A Category IV appliance utilizes uncontaminated indoor or outdoor air (surrounding the appliance) for combustion. A Direct Vent appliance utilizes uncontaminated outdoor air (piped directly to the appliance) for combustion.

BEST PRACTICE

In order to reduce the potential risks associated with indoor contaminates (listed on page 5), flammable vapors and tight housing construction (little or no infiltration air), it is recommended to pipe uncontaminated combustion air directly from the outdoors to the appliance. This practice also promotes higher system efficiency by reducing heated indoor air from being exhausted from the house and replaced by cold infiltration air into the house.

NOTICE

Install combustion air and vent pipe as detailed in the PRESTIGE Vent Supplement included in the boiler installation envelope. Refer to optional vent kit instructions for additional vent installation instructions.

⚠ DANGER

Verify installed combustion air and vent piping are sealed gas tight and meet all provided instructions and applicable codes, failure to comply will result in severe personal injury of death.

Removal of an Existing Boiler from a Common Vent System

BEST PRACTICE

When an existing boiler is removed from a common venting system, the common venting system is likely to be too large for proper venting of the remaining appliances. At the time of removal of an existing boiler, the following steps shall be followed with each appliance remaining connected to the common venting system placed in operation, while the other appliances remaining connected to the common venting system are not in operation.

1. Seal any unused openings in the common venting system.
2. Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.
3. Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on clothes dryers and any appliance not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.
4. Place in operation the appliance being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.
5. Test for spillage at the draft hood relied opening after 5 minutes of main burner operation. Use the flame of a match or candle, or smoke from a cigarette, cigar or pipe.
6. After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers, and any other gas-burning appliance to their previous condition of use.
7. Any improper operation of the common venting system should be corrected so the installation conforms with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and/or CAN/CGA B149, Installation codes. When resizing any portion of the common venting system, the common venting system should be resized to approach the minimum size as determined using the appropriate tables in Part II of the National Fuel Gas Code ANSI Z223.1/NFPA 54 and/or CAN/CGA B149, Installation codes.

⚠ DANGER

Do not install the PRESTIGE Excellence into a common vent with other gas or oil appliances. This may cause flue gas spillage or appliance malfunction, resulting in possible severe personal injury, death or substantial property damage.

Commonwealth of Massachusetts Installations Only

For direct-vent appliances, mechanical-vent heating appliances or domestic hot water equipment, where the bottom of the vent terminal and the air intake is installed below four feet above grade the following requirements must be satisfied:

1. If there is not one already present, on each floor level where there are bedroom(s), a carbon monoxide detector and alarm shall be placed in the living area outside the bedroom(s). The carbon monoxide detector shall comply with NFPA 720 (2005 Edition).
2. A carbon monoxide detector shall be located in the room that houses the appliance or equipment and shall:
   a. Be powered by the same electrical circuit as the appliance or equipment such that only one service switch services both the appliance and the carbon monoxide detector;
   b. Have battery back-up power;
   c. Meet ANSI/UL 2034 Standards and comply with NFPA 720 (2005 Edition); and
   d. Have been approved and listed by the Nationally Recognized Testing Laboratory as recognized under 527 CMR.
3. A Product-approved vent terminal must be used, and if applicable, a Product-approved air intake must be used. Installation shall be in strict compliance with the manufacturer's instructions. A copy of the installation instructions shall remain with the appliance or equipment at the completion of the installation.
4. A metal or plastic identification plate shall be mounted at the exterior of the building, four feet directly above the location of vent terminal. The plate shall be of sufficient size to be easily read from a distance of eight feet away, and read "**Gas Vent Directly Below**".

NOTICE

Installer must provide tag identification plate and ensure the lettering meets code requirements.

For direct-vent appliances, mechanical-vent heating appliances or domestic hot water equipment, where the bottom of the vent terminal and the air intake are installed above four feet above grade the following requirements must be satisfied:

1. If there is not one already present, on each floor level where there are bedroom(s), a carbon monoxide detector and alarm shall be placed in the living area outside the bedroom(s). The carbon monoxide detector shall comply with NFPA 720 (2005 Edition).
2. A carbon monoxide detector shall:
   a. Be located in the rooms that houses the appliances or equipment;
   b. Be either hard wired or battery powered or both; and
   c. Shall comply with NFPA 720 (2005 Edition)
3. A Product-approved vent terminal must be used, and if applicable, a Product-approved air intake must be used. Installation shall be in strict compliance with the manufacturer's instructions. A copy of the installation instructions shall remain with the appliance or equipment at the completion of the installation.

SECTION III - Unit Preparations

Handling Instructions

The PRESTIGE Excellence is generally easier to handle and maneuver once removed from the shipping carton and pallet.

To remove the shipping carton and pallet:

⚠ CAUTION

Use care not to lift the unit from, or place the unit on the front plastic control panel, damage can occur. Use care not to drop, bump or rotate the boiler upside down, as damage to the boiler will result.

1. Remove any shipping straps and open the side of the shipping carton.
2. Slide the unit with the foam inserts out of the carton.
3. Discard all packing materials.

Wall Mounting Installation

Due to the excessive weight, the PRESTIGE Excellence should be wall mounted using the bracket kit provided with the boiler. The PRESTIGE is not designed for floor installation. If floor installation is required an optional floor stand is available through Triangle Tube.

⚠ WARNING

The wall used for mounting the PRESTIGE Excellence must be vertically plumbed and capable of supporting a minimum 250 pounds [113 Kg]. Failure to comply with these requirements could result in personal injury, death or substantial property damage.

Wall Mounting Guidelines

1. The wall frame kit is designed for stud spacing of 12 inch or 16 inch on centers. For unconventional stud spacing, a solid / secure mounting surface must be provided for installation of the bracket.
2. DO NOT mount or attempt to mount the wall bracket to hollow sheet rock or lathe walls using anchors. Only install boiler to studs or equivalent wood structure.
3. For applications using solid walls (rock, concrete, brick, cinder block, etc.), install the wall bracket using anchors (double expansion shields) and bolts with washers provided with the boiler.
4. The boiler is too heavy and bulky for a single person to lift and attempt to mount; a minimum of 2 people is required for mounting the boiler.

⚠ WARNING

Use extreme care not to drop the boiler or cause bodily injury while lifting or mounting the boiler onto the bracket. Once mounted verify that the boiler is securely attached to the bracket and wall. Failure to comply with the above guidelines could result in property damage, personal injury or death.

Stud Walls -Installation

1. To distribute the weight of the boiler evenly when mounting onto a stud wall it is recommended to use the PRESTIGE Wall Frame kit.
2. When using the wall frame to mount the boiler reference the kit installation instructions and ensure the frame is securely fastened to the wall.
3. If the structure of wall is questionable, in supporting a minimum weight of 250 pounds [113 Kg.], it is recommended to use the optional floor stand.

Wall Bracket Installation - Solid Walls

1. Locate the general area of the boiler placement.
2. Place the wall-mounting bracket on the wall ensuring the upper edge of the bracket is away from the wall.
3. Level the bracket and use a pencil to mark the location of the mounting slots on the wall.
4. Remove the bracket from the wall and drill a 5/8" diameter hole by 1-3/8" deep positioned in the center of each mark.
5. Install the anchors (provided) flush or slightly recessed in the drilled holes with threaded side facing down.
6. Reposition the bracket on the wall and align mounting slots/holes. Insert the two bolts (provided) through the mounting slots/holes and loosely tighten.
7. Level bracket and tighten bolts securely.

Boiler Mounting

1. Obtain assistance in lifting the boiler onto the wall bracket.
2. Install the boiler making sure the boiler mounting lip located along the upper edge of the rear jacket panel engages the wall-mounting bracket. Ensure the boiler is seated properly and is secure.

SECTION IV - Boiler Piping

General Piping Requirements

- All plumbing must meet or exceed all local, state and national plumbing codes.
- Support all piping using hangers. DO NOT support piping by the unit or its components.
- Use isolation valves to isolate system components.
- Install unions for easy removal of the PRESTIGE Excellence from the system piping.
- If plastic pipe is used for boiler water piping, it must have a maximum oxygen diffusion rate of 0.1 mg/liter-day for boiler and water heater protection.

⚠ WARNING

Use a two wrench method when tightening piping onto the boiler connections. Use one wrench to prevent the boiler piping from turning / twisting. Failure to support the boiler piping and connections in this manner could cause damage to the boiler and its components.

Pressure Relief Valve

1. The PRESTIGE Excellence is supplied with a 30 psi pressure relief valve and must be piped using the PRV connection as shown in Fig. 5 page 15.
2. To avoid potential water damage to the surrounding area or potential scalding hazard due to the operation of the relief valve, the discharge piping:
   - Must be connected to the discharge outlet of the relief valve and directed to a safe place of disposal.
   - Length should be as short and direct as possible. The size of the discharge line should not be reduced, maintain the same size as the outlet of the relief valve.
   - Should be directed downward towards the floor at all times. The piping should terminate at least 6 inches above any drain connection to allow clear visibility of the discharge.
   - Should terminate with a plain end, not with a threaded end. The material of the piping should have a serviceable temperature rating of 250ºF or greater.
   - Should not be subject to conditions where freezing could occur.
   - Should not contain any shut-off valves or obstructions. No shut-off valve should be piped between the boiler and relief valve.

⚠ WARNING

Failure to comply with the guidelines on installing the pressure relief valve and discharge piping can result in personal injury, death or substantial property damage.

Low Water Cutoff Device

- The PRESTIGE Excellence is equipped with a factory installed pressure switch type Low Water Cut Off device.
- The minimum operating system pressure allowable with this device is 10 psig.
- Check local codes if a Low Water Cutoff Device is required. If so, determine if this device meets the requirements of the local codes.

NOTICE

The PRESTIGE Excellence control system also uses the sensing of the system water temperatures entering and exiting the heat exchanger to provide protection against low water conditions Where local codes and jurisdiction do not accept a pressure device for low water protection, the jurisdictions may accept these PRESTIGE Excellence integral control functions as a means of providing low water protection.

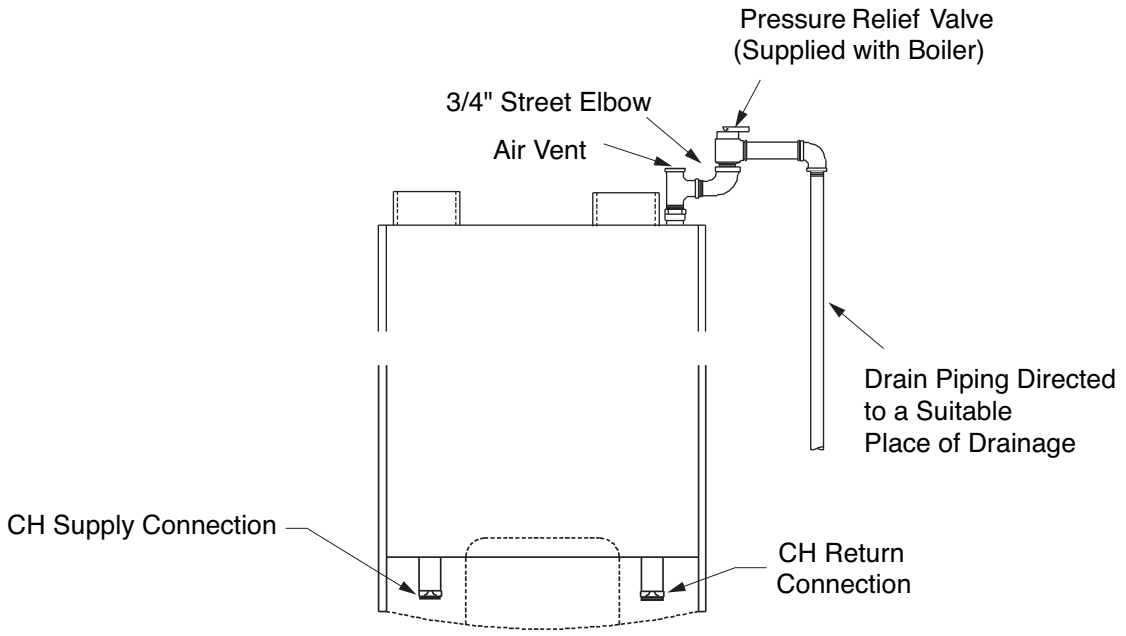


Fig. 5: Pressure Relief Valve Installation

Additional Limit Control

If a separate LWCO device is required by certain local jurisdictions or when the boiler is installed above the system piping, the following guidelines must be followed:

- The LWCO device must be designed for water installations, electrode probe-type is recommended.
- The LWCO device must be installed in a tee connection on the boiler supply piping above the boiler.
- Wiring of the LWCO device to the PRESTIGE Excellence is done directly onto the 24V terminal strip, reference Fig. 20 page 29 for available terminals for an external limit (manual or auto reset).

If the installation is to comply with ASME or Canadian requirements, an additional high temperature limit may be needed. Consult local code requirements to determine compliance. The limit should be installed as follows:

- Install the limit in the boiler supply piping between the boiler and any isolation valve.
- Maximum set point for the limit is 194ºF.
- For wiring of the limit reference Fig. 20, page 29, using the external limit/manual reset terminals on the 24V terminal strip. This will provide a "hard" lockout requiring a manual reset of the control.

Backflow Preventer

- Use a backflow preventer valve in the make-up water supply to the unit as required by local codes.

Boiler System Piping Applications

BEST PRACTICE

It is recommended on all piping applications to utilize a primary/secondary piping arrangement as a means to provide freeze protection of the boiler, which is an integral function of the boiler control. Maintain the minimum boiler flow rate, see Graph 2 on page 70. For other piping arrangements, consult the Engineering Department at Triangle Tube or consult other approved/recognized design arrangement.

BEST PRACTICE

On piping applications utilizing a single zone or other recognized piping design arrangements, it is recommended that the installer uses flow/check valves with weighted seats at or near the appliance to prevent gravity circulation.

Expansion Tank and Makeup Water

Ensure the expansion tank is properly sized for the boiler volume (5 gallons [19 L]) and the system volume and temperature.

⚠ CAUTION

Undersized expansion tanks will cause system water to be lost through the pressure relief valve and cause additional makeup water to be added to the system. Eventual boiler heat exchanger failure can result due to this excessive makeup water addition.

The expansion tank must be located as shown in the piping diagrams on pages 19 through 21 or as per recognized design methods. Refer to the expansion tank manufacturer instructions for additional installation details.

Connect the expansion tank to an air separator only if the air separator is located on the suction side (inlet) of the system circulator. Always locate and install the system fill connection at the same location as the expansion tank connection to the system.

Diaphragm Expansion Tank

Always install an automatic air vent on the top of the air separator to remove residual air from the system.

Closed-Type Expansion Tank

It is recommended to pitch any horizontal piping upwards toward the expansion tank 1 inch per 5 feet of piping. Use 3/4" piping for the expansion tank to allow air within the system to rise.

⚠ CAUTION

DO NOT install automatic air vents on a closed-type expansion tank system. Air must remain in the system and be returned to the expansion tank to provide an air cushion. An automatic air vent would cause air to be vented from the system resulting in a water-logged expansion tank.

Circulator

The PRESTIGE Excellence is supplied with a boiler circulator that provides circulation for space (CH) heating and domestic (DHW) hot water production. See Graph 2 on page 70 for pressure drop and minimum flow rate through the boiler.

Sizing Primary Piping

See Fig. 9 through 13, pages 19 - 21, for recommended piping arrangements based on various applications.

Size the piping and system components required in the space heating system, using recognized design methods.

System Piping - Zone Circulators

Connect the PRESTIGE Excellence to the system piping as shown in Fig. 9 page 19 when zoning with zone circulators.

The installer must provide a separate circulator for each zone of space heating.

NOTICE

To ensure adequate flow rate through the PRESTIGE Excellence, maintain a minimum 1 inch diameter on the system piping connecting to the boiler.

System Piping - Zone Valves

Connect the PRESTIGE Excellence to the system piping as shown in Fig. 10 page 19 when zoning with zone valves. The primary / secondary piping ensures that the boiler loop has sufficient flow.

NOTICE

To ensure adequate flow rate through the PRESTIGE Excellence, maintain a minimum 1 inch diameter on the system piping connecting to the boiler.

System Piping - Through Boiler

In applications in which primary/secondary piping is not utilized and the system is zoned with zone valves a circulator could pump through the boiler and system directly. When pumping through with more than one zone, a pressure differential bypass valve is required to avoid dead heading the pump through the post pump feature of the control. Consult Fig. 11 and 12 page 20 for piping diagrams and Graph 2 on page 70 for proper circulator sizing.

System Piping - Radiant Heating

The heat exchanger design of the PRESTIGE Excellence allows operation in a condensing mode. This feature requires no regulation of the return water temperature back to the boiler in radiant heating applications.

The boiler water supply temperature can be maintained by the PRESTIGE Excellence, eliminating the need for a mix system to achieve the desired temperature.

The installer may consider adding a high temperature limit on the system piping to ensure that the primary supply temperature does not exceed the maximum allowable temperature for the radiant tubing.

BEST PRACTICE

The addition of the high temperature limit is important when the PRESTIGE Excellence has completed a DHW mode, which requires a high primary supply water temperature.

NOTICE

Due to the construction of the water heater, do not install the PRESTIGE Excellence if the boiler piping contains non-oxygen barrier tubing if the boiler piping is considered an "open system". Exposing the outer tank of the PRESTIGE Excellence water heater to oxygen contamination will lead to premature tank failure and denial of the warranty.

Size the system piping and circulator to provide the flow needed for the radiant system.

NOTICE

To ensure adequate flow rate through the PRESTIGE Excellence, maintain a minimum 1 inch diameter on the system piping connecting to the boiler.

System Piping - Special Application

If the boiler is used in conjunction with a chilled water/medium system, the boiler and chiller must be piped in parallel. Install flow/check valves to prevent the chilled medium from entering into the boiler.

If the boiler is used to supply hot water to the heating coils of an air handler where they may be exposed to chilled air circulation, install flow/check valves or other automatic means to prevent gravity circulation of the boiler water during cooling cycles.

System Piping - Multiple Units Installation

It is recommended to use a balanced manifold system as the primary / secondary connection to the space heating piping.

Maintain a minimum of 6 inches of clearance between units to allow for servicing.

For the space heating piping refer to the applications mentioned in this manual or use recognized design methods.

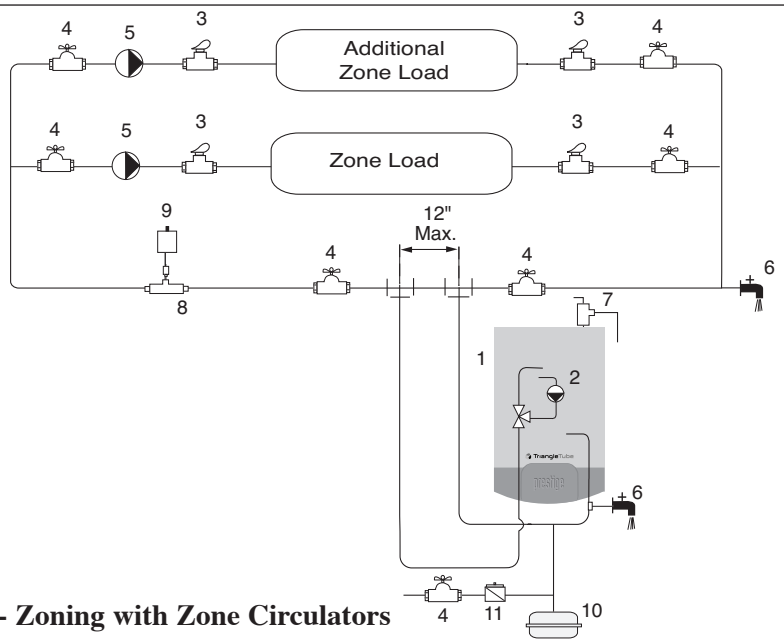


Fig. 9: CH System Piping - Zoning with Zone Circulators

1. PRESTIGE Excellence boiler
2. CH circulator (provided)
3. Flow/check valve
4 Isolation valve
5. Zone circulator
6. Drain/purge valve
7. Pressure relief valve
8. Air separator
9. Automatic air vent
10. Diaphragm expansion tank
11. Automatic fill valve

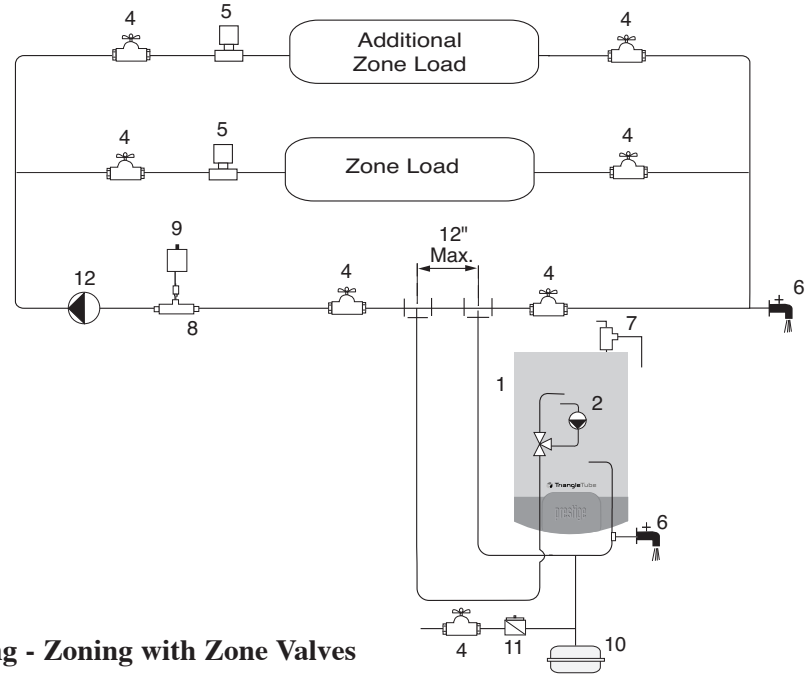
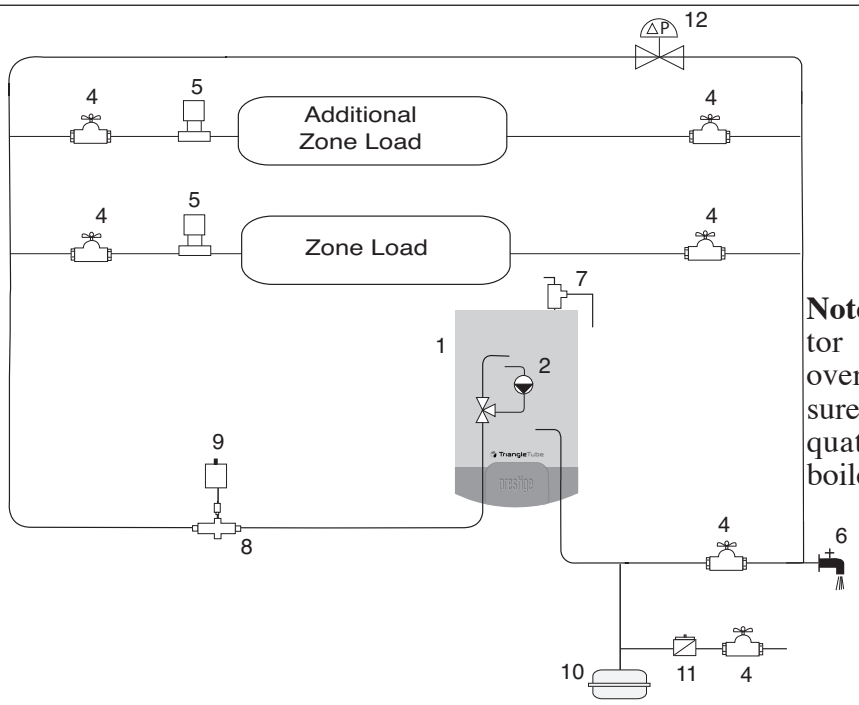


Fig. 10: CH System Piping - Zoning with Zone Valves

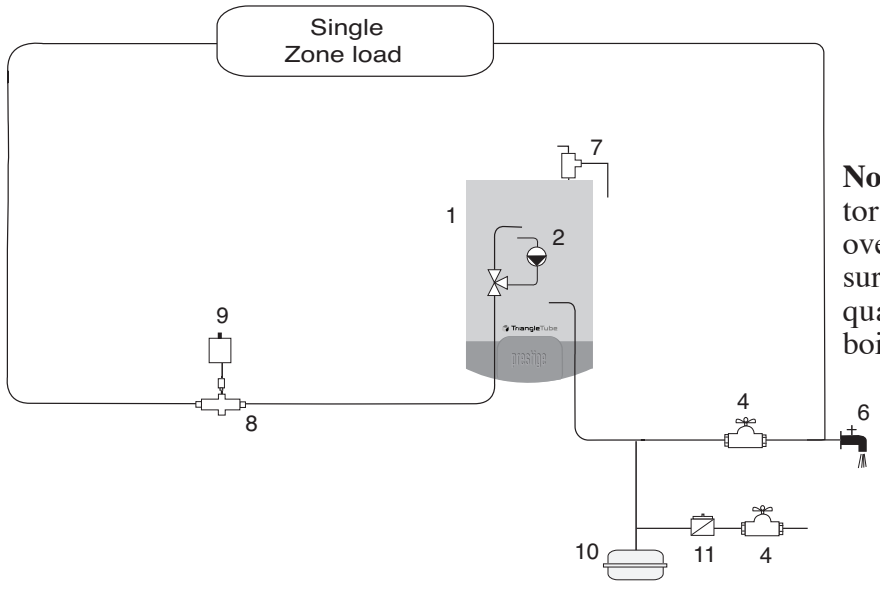
1. PRESTIGE Excellence boiler
2. CH circulator (provided)
3. Flow/check valve
4 Isolation valve
5. Zone valve
6. Drain/purge valve
7. Pressure relief valve
8. Air separator
9. Automatic air vent
10. Diaphragm expansion tank
11. Automatic fill valve
12. System circulator



Note: Verify CH circulator is properly sized to overcome the system pressure drop and provide adequate flow through the boiler system.

Fig. 11: CH System Piping - Multiple Zone Valve with Single System/Boiler Circulator

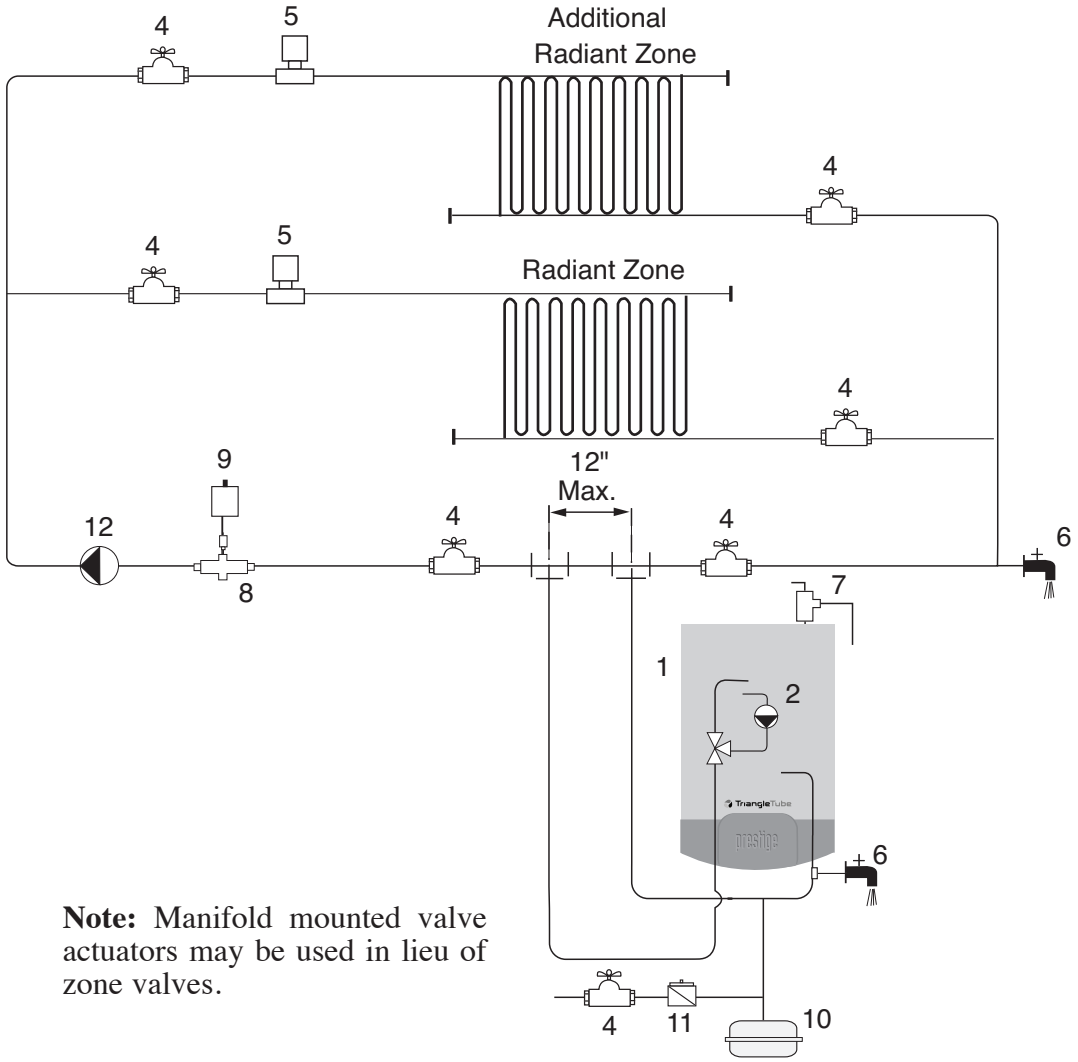
1. PRESTIGE Excellence boiler	6. Drain/purge valve	10. Diaphragm expansion tank
2. CH circulator	7. Pressure relief valve	11. Automatic fill valve
4 Isolation valve	8. Air separator	12. Pressure differential valve
5. Zone valve	9. Automatic air vent	



Note: Verify CH circulator is properly sized to overcome the system pressure drop and provide adequate flow through the boiler system.

Fig. 12: CH System Piping - Single Zone System with Single System/Boiler Circulator

1. PRESTIGE Excellence boiler	6. Drain/purge valve	10. Diaphragm expansion tank
2. CH circulator	7. Pressure relief valve	11. Automatic fill valve
3. Flow check valve	8. Air separator	
4 Isolation valve	9. Automatic air vent	



Note: Manifold mounted valve actuators may be used in lieu of zone valves.

Fig. 13: CH System Piping - Radiant/Low Temp. Heating

1. PRESTIGE Excellence boiler
2. CH circulator (provided)
3. Flow/check valve
4 Isolation valve
5. Zone valve
6. Drain/purge valve
7. Pressure relief valve
8. Air separator
9. Automatic air vent
10. Diaphragm expansion tank
11. Automatic fill valve
12. System circulator

SECTION V - Installing Vent / Combustion Air & Condensate Drain

Installing Vent and Combustion Air

⚠ DANGER

The PRESTIGE Excellence must be vented and supplied with combustion air as shown in the PRESTIGE Vent Supplement, included in the boiler installation envelope. Refer to optional vent kit instructions for additional vent installation instructions. Once installation is completed, inspect the vent and combustion air system thoroughly to ensure systems are airtight and comply with the instructions given in the venting supplement and are within all requirements of applicable codes. Failure to comply with the installation requirements on the venting and combustion air piping will cause severe personal injury or death.

Installing Condensate Drain Assembly

1. Locate the condensate drain assembly and install as shown in Fig. 15 page 23.

NOTICE

The installer may want to fill the condensate trap with water prior to assembling on the unit.

2. Remove the retaining nut and rubber seal from the condensate drain assembly and slide over the heat exchanger condensate drain nipple. Connect the condensate drain assembly to the retaining nut and tighten. **Hand tight only!**

⚠ WARNING

Ensure the condensate drain assembly contains the plastic seated ball. Do not install the condensate drain assembly if the ball is lost or missing, replace the entire assembly.

3. Remove the compression nut and rubber seal from the drain outlet.
4. Using 3/4" x 2' flexible PVC tube provided, slide the compression nut and rubber seal over the pipe.

NOTICE

The use of 3/4" PVC or CPVC pipe is also acceptable. If 3/4" pipe is used deburr and chamfer pipe to allow mating onto the drain assembly.

5. Thread the rubber seal into the compression nut to ease installation of the pipe to the drain assembly.
6. Seat the pipe onto the drain assembly and tighten the compression nut. **Hand tight only!**

NOTICE

The installer may opt to using 13/16" ID tubing in lieu of rigid piping.

NOTICE

The drain line materials must be an approved material by the authority having jurisdiction. In absence of such authority, PVC and CPVC piping must comply with ASTM D1785 or D2845. The cement and primer used on the piping must comply with ASME D2564 or F493. For installations in Canada, use CSA or ULC certified PVC or CPVC pipe, fittings and cement/primer.

7. Continue the pipe from the drain assembly to a floor drain or condensate pump.

NOTICE

When selecting and installing a condensate pump, ensure the pump is approved for use with condensing boilers and furnaces. The pump should be equipped with an overflow switch to prevent property damage from potential condensate spillage.

8. The PRESTIGE Excellence will typically produce a condensate that is considered slightly acidic with a pH content below 3.0. Install a neutralizing filter if required by authority having jurisdiction.

⚠ CAUTION

The condensate drain must remain filled and unobstructed and allow unrestricted flow of condensate. The condensate should not be subject to conditions where freezing could occur. If the condensate is subjected to freezing or becomes obstructed , it can exit from the heat exchanger, resulting in potential water damage to the boiler and surrounding area.

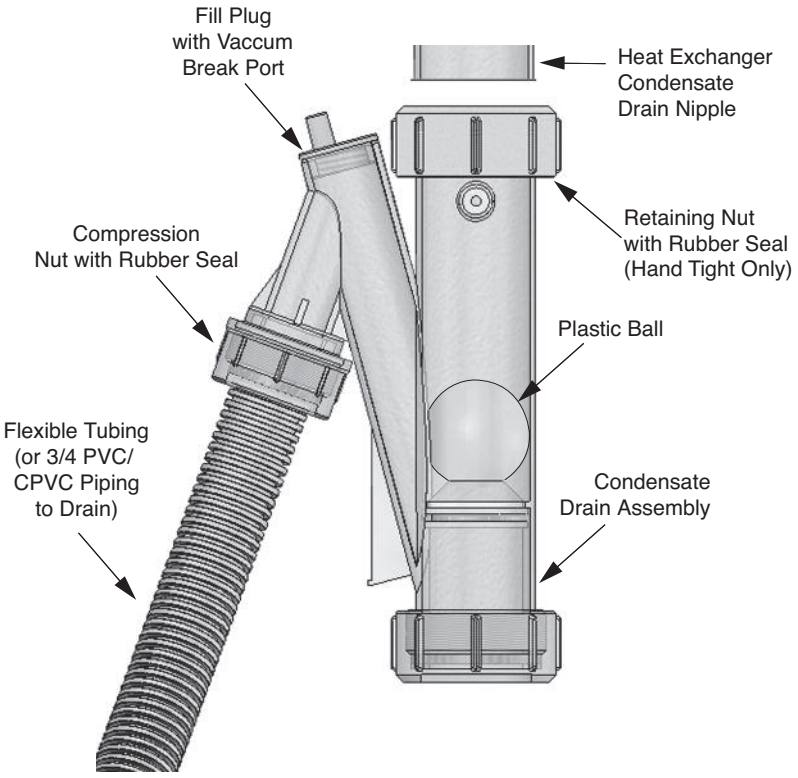


Fig. 15: Condensate Drain Assembly

SECTION VI - Gas Piping

Gas Supply Piping Connection

The gas supply piping must be installed in accordance to all applicable local, state and national codes and utility requirements.

1. Install a 1/2" NPT pipe union at the factory supplied gas nipple, for ease of service.
2. Install a manual shutoff valve in the gas supply piping as shown in Fig. 16. For installations in Canada the installer must tag and identify the main shutoff valve.
3. Install a sediment trap (drip leg) on the gas supply line prior to connecting to the PRESTIGE Excellence gas train as shown in Fig. 16.
4. Support the gas piping using hangers. Do not support the piping by the unit or its components.
5. Purge all air from the gas supply piping.
6. Before placing the PRESTIGE Excellence into operation, check and test all connections for leaks.
   - Close the manual shutoff valve during any pressure test with less than 13"w.c..
   - Disconnect the PRESTIGE Excellence and its gas valve from the gas supply piping during any pressure test greater than 13"w.c..

⚠ WARNING

Do not check for gas leaks with an open flame. Use a gas detection device or bubble test. Failure to check for gas leaks can cause severe personal injury, death or substantial property damage.

7. Use pipe dope compatible with natural and propane gases. Apply sparingly only to the male threads of pipe joints so that pipe dope does not block gas flow.

⚠ WARNING

Failure to apply pipe dope as detailed above can result in severe personal injury, death or substantial property damage.

⚠ WARNING

Use a two-wrench method of tightening gas piping near the unit and its gas piping connection. Use one wrench to prevent the boiler gas line connection from turning and the second to tighten adjacent piping. Failure to support the boiler gas piping connection could damage the gas line components.

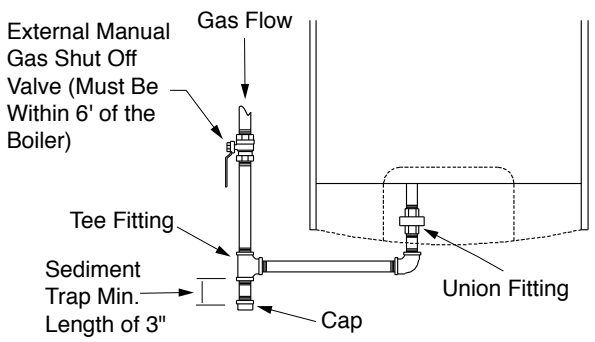

Gas Flow
External Manual Gas Shut Off Valve (Must Be Within 6' of the Boiler)
Tee Fitting
Sediment Trap Min. Length of 3"
Union Fitting
Cap

Fig. 16: Recommended Gas Supply Piping

NATURAL GAS

Pipe Sizing - Natural Gas

Refer to Table 1 for Schedule 40 metallic pipe length and diameter requirements for natural gas, based on rated PRESTIGE Excellence input (divide by 1,000 to obtain cubic feet per hour).

- Table 1 is based on Natural Gas with a specific gravity of 0.60 and a pressure drop through the gas piping of 0.30"w.c..
- For additional gas piping sizing information, refer to ANSI Z223.1. For Canadian installations refer to B149.1 or B149.2.

Natural Gas Supply Pressure Requirements

1. Pressure required at the gas valve inlet supply pressure port:
   - Maximum 13"w.c. at flow or no flow conditions to the burner.
   - Minimum 5"w.c. during flow conditions to the burner. Must be verified during start up and with all other gas appliances operating within the building.
2. Install 100% lockup gas pressure regulator in the gas supply line if inlet pressure can exceed 13"w.c at any time. Adjust the lock-up pressure regulator for 13"w.c maximum.

⚠ WARNING

DO NOT adjust or attempt to measure gas valve outlet pressure. The gas valve is factory-set for the correct outlet pressure. This setting is suitable for natural gas and propane and requires no field adjustment. Attempts by the installer to adjust or measure the gas valve outlet pressure could result in damage to the valve, causing potential severe personal injury, death or substantial property damage.

Table 1: Gas Piping Sizing - Natural Gas

Length of Pipe in Feet	Capacity of Schedule 40 Metallic Pipe in Cubic Feet of Natural Gas Per Hour (based on 0.60 specific gravity, 0.30" w.c. pressure drop)				
SCH 40	1/2"	3/4"	1"	1 1/4"	1 1/2"
10	132	278	520	1050	1600
20	92	190	350	730	1100
30	73	152	285	590	890
40	63	130	245	500	760
50	56	115	215	440	670
75	45	93	175	360	545
100	38	79	150	305	460
150	31	64	120	250	380

PROPANE GAS

Pipe Sizing - Propane Gas

1. Contact the local propane gas supplier for recommended sizing of piping, tanks and 100% lockup gas regulator.

Propane Gas Supply Pressure Requirements

1. Adjust the propane supply regulator provided by the gas supplier for 13"w.c. maximum pressure
2. Pressure required at the gas valve inlet supply pressure port:
   - Maximum 13"w.c. at flow or no flow conditions to the burner
   - Minimum 5"w.c. during flow conditions to the burner. Must be verified during start up and with all other gas appliances operating within the building.

NOTICE

The propane orifice requirement for PRESTIGE Excellence is 0.204" (#52)

⚠ WARNING

DO NOT adjust or attempt to measure gas valve outlet pressure. The gas valve is factory-set for the correct outlet pressure. This setting is suitable for natural gas and propane and requires no field adjustment. Attempts by the installer to adjust or measure the gas valve outlet pressure could result in damage to the valve, causing potential severe personal injury, death or substantial property damage.

⚠ WARNING

Prior to start up, ensure the unit is set to fire propane. Check the rating label for the type of fuel. Check the gas valve for propane conversion label. If there is a conflict or doubt on the burner set up, remove the gas valve and check for the propane orifice, see Fig. 17 page 27. Failure to ensure proper burner setup could result in severe personal injury, death or substantial property damage.

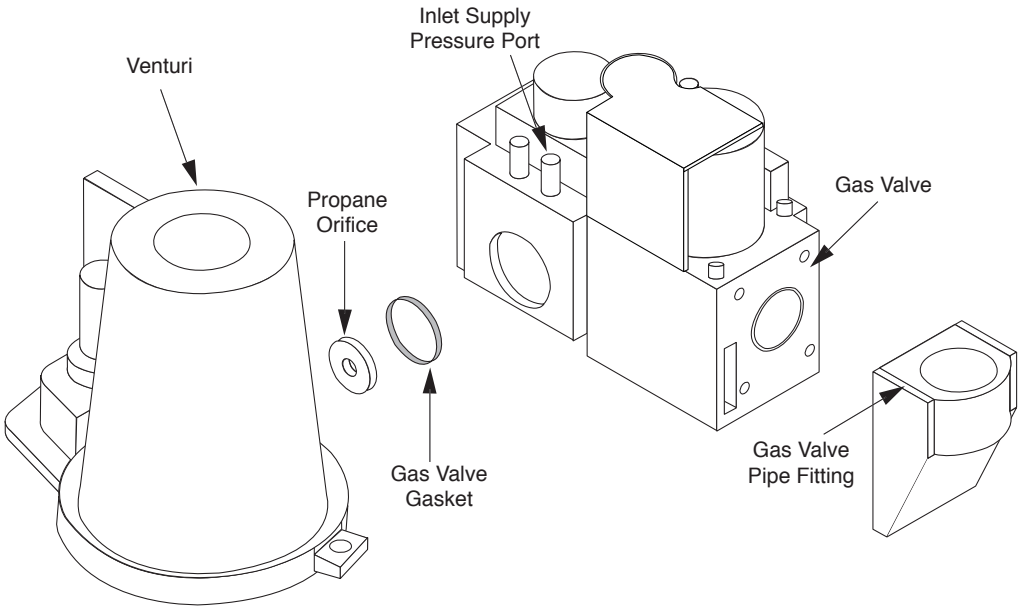


Fig. 17: Gas Valve / Venturi Assembly

SECTION VII - Internal Wiring

⚠ WARNING

ELECTRICAL SHOCK HAZARD. For your safety, disconnect electrical power supply to the unit before servicing or making any electrical connections to avoid possible electric shock hazard. Failure to do so can cause severe personal injury or death.

⚠ CAUTION

Prior to servicing, label all wires prior to disconnection. Wiring errors can cause improper and dangerous operation. Verify proper wiring and operation after servicing.

General Requirements

- Wiring must be N.E.C Class 1.
- If original wiring as supplied with the unit must be replaced, use only Type T 90ºC (190ºF) wire or equivalent as a minimum.
- The PRESTIGE Excellence must be electrically grounded as required by National Electrical Code ANSI/NFPA 70 - latest edition and / or the Canadian Electrical Code Part 1, CSA C22.1, Electrical Code.

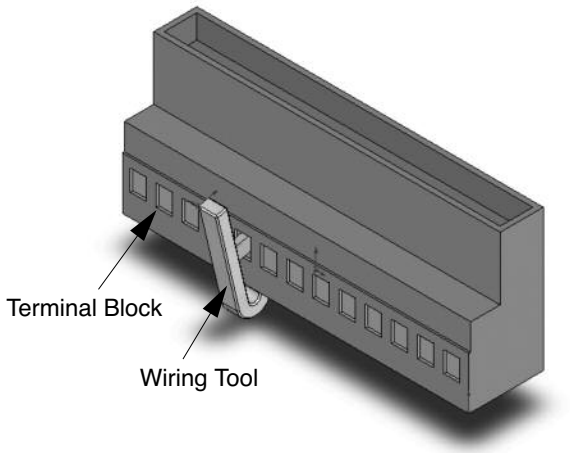


Fig. 19: Using the wiring tool on the terminal blocks

Control Module Circulator AMP Ratings

- AMP draw of the CH circulator not to exceed 2 amps

Wiring Tool Instructions

1. Locate the wiring tool on the PRESTIGE Excellence just below the MCBA control in a plastic bag.
2. Locate the terminal blocks on the PRESTIGE Excellence below the MCBA control.

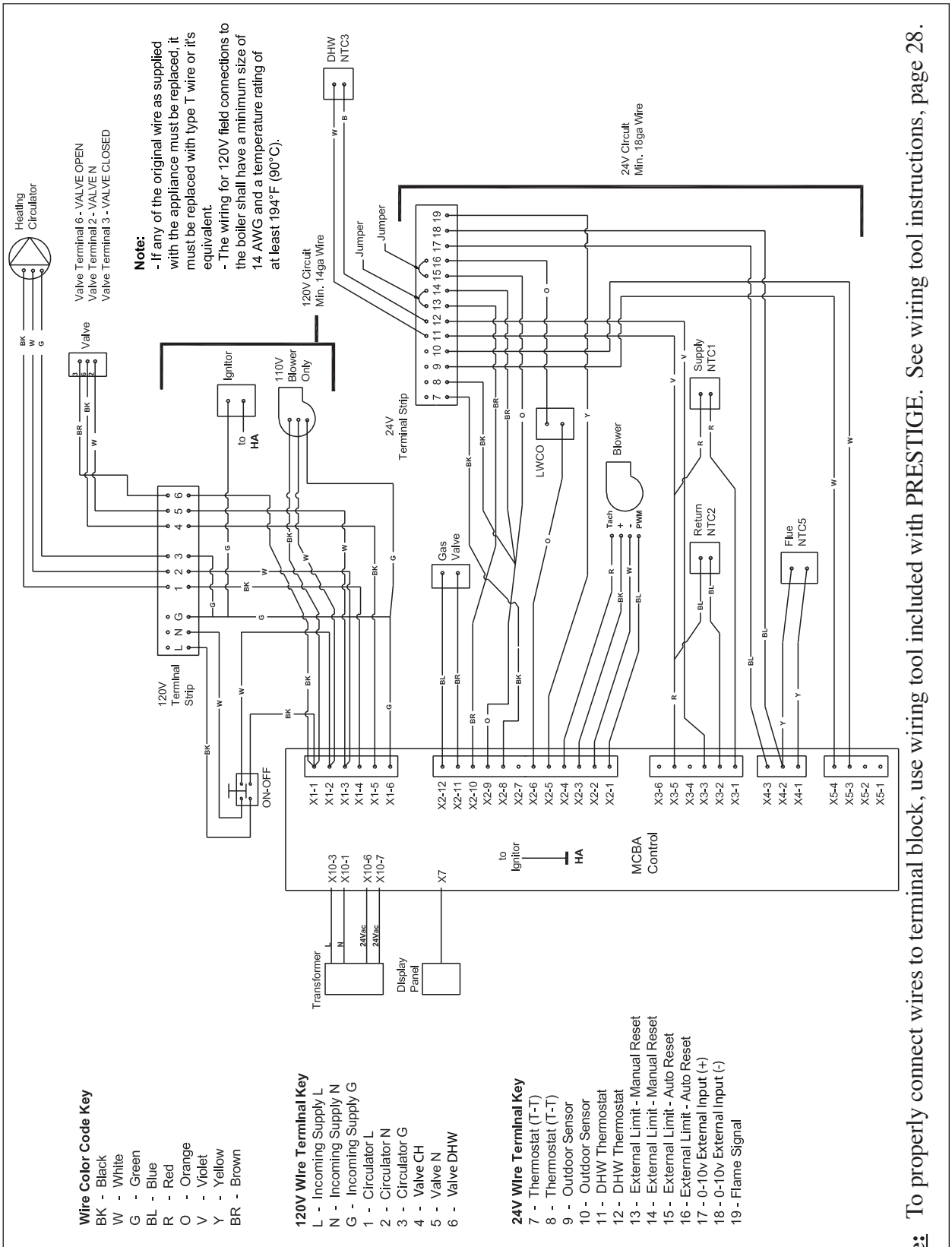
NOTICE

The 120V Terminals are located on the left set of Terminal Blocks. The 24V Terminals are located on the right set of terminal blocks.

3. Carefully pull down on the lower half of the terminal block to remove.
4. Hook the wiring tool into the desired slot of the terminal block as shown in Fig.19.
5. Push wiring tool in towards the terminal block and insert wire in slot at bottom of terminal block.
6. Repeat steps 4 & 5 until all wiring is complete.
7. Re-connect the lower half of the terminal block to the upper half.
8. Place the wiring tool back into the plastic bag or leave tool hooked to a slot on the 24V terminal block.

BEST PRACTICE

When wiring the PRESTIGE Excellence allow additional length of wire for the access panel to swing open during servicing.


Heating Circulator
Valve Terminal 6 - VALVE OPEN
Valve Terminal 2 - VALVE N
Valve Terminal 3 - VALVE CLOSED
Valve
Note:
- If any of the original wire as supplied with the appliance must be replaced, it must be replaced with type T wire or it's equivalent.
- The wiring for 120V field connections to the boiler shall have a minimum size of 14 AWG and a temperature rating of at least 194°F (90°C).
120V Circuit Min. 14ga Wire
Jumper
Jumper
DHW NTC3
24V Circuit Min. 18ga Wire
Ignitor
to HA
110V Blower Only
24V Terminal Strip
120V Terminal Strip
Gas Valve
LWCO
Blower
Supply NTC1
Return NTC2
Flue NTC5
ON-OFF
MCBA Control
Transformer
Display Panel
to Ignitor
HA
Wire Color Code Key
BK - Black
W - White
G - Green
BL - Blue
R - Red
O - Orange
V - Violet
Y - Yellow
BR - Brown
120V Wire Terminal Key
L - Incoming Supply L
N - Incoming Supply N
G - Incoming Supply G
1 - Circulator L
2 - Circulator N
3 - Circulator G
4 - Valve CH
5 - Valve N
6 - Valve DHW
24V Wire Terminal Key
7 - Thermostat (T-T)
8 - Thermostat (T-T)
9 - Outdoor Sensor
10 - Outdoor Sensor
11 - DHW Thermostat
12 - DHW Thermostat
13 - External Limit - Manual Reset
14 - External Limit - Manual Reset
15 - External Limit - Auto Reset
16 - External Limit - Auto Reset
17 - 0-10v External Input (+)
18 - 0-10v External Input (-)
19 - Flame Signal

Note: To properly connect wires to terminal block, use wiring tool included with PRESTIGE. See wiring tool instructions, page 28.

Fig. 20: PRESTIGE Excellence Boiler Factory Wiring

SECTION VIII- External Wiring

Installation Compliance

All field wiring made during installation must comply with:

- National Electrical Code NFPA 70 and any other national, state, provincial or local codes or requirements.
- In Canada, CSA C22.1 Canadian Electrical Code Part 1, and any other local codes.

⚠ WARNING

ELECTRICAL SHOCK HAZARD. Before making any electrical connections to the PRESTIGE Excellence, disconnect electrical power supply at the service panel. Failure to comply can cause severe personal injury or death.

Line Voltage Connections

1. Connect 120 VAC/15 amp minimum power wire to the 120V terminal strip on the wiring panel below the PRESTIGE Excellence control module, as shown in Fig. 20, page 29.
2. Route the incoming 120 VAC power wire through the provided openings in the bottom jacket panel.
3. The unit is provided with a service switch located on the front panel, check local code requirements for compliance.

NOTICE

If local electrical codes or conditions require an additional service switch, the installer must provide and install a fused disconnect or 15 amp (minimum) service switch.

Thermostat Wiring

NOTICE

Isolate 120V wiring from 24V wiring to prevent any potential electrical "noise".

1. Connect room thermostat or the end switch (isolated contact only) of a relay control panel to the 24V terminal strip on the wiring panel below the PRESTIGE Excellence control module, as shown in Fig. 20, page 29.
2. For proper operation install the room thermostat on an inside wall away from influences of heat and cold, i.e. water pipes, areas of draft, lighting fixtures and fireplaces.
3. Set the thermostat anticipator (if applicable) as follows:
   - Set for 0.2 amps when wired directly to the Room Thermostat.
   - Set to match the total electrical power requirements of the connected devices when wired to zone relays or other devices. Refer to the relay manufacturers' specifications and the thermostat instructions for additional information on the anticipator setting.

NOTICE

When making low voltage connections to the PRESTIGE Excellence, ensure no external voltage is present in the thermostat circuits. If external voltage is present, provide an isolated contact to prevent damage to the boiler control.

System Circulator - Zone Valve Application

To energize the system circulator shown as item 12 in Fig. 10 page 19 reference Fig. 21. Installer to provide a Transformer / Relay such as Honeywell R8285 or equivalent and Zone Valves with isolated end switch such as Honewell V8043 or equivalent.

External Modulating Control

The Prestige EXCELLENCE firing rate can be controlled by an external modulating boiler controller. See page 29 for wiring and page 51 for control module setup.

Outdoor Reset Control

1. The PRESTIGE Excellence may operate with a variable boiler operating temperature using the Triangle Tube outdoor sensor, see pages 47 through 50 for installation and setup.

NOTICE

If the installer opts for a fixed operating temperature for the boiler system, the outdoor sensor is not required and should not be installed.

Additional 24V Limit Wiring

The PRESTIGE Excellence provides 24V terminal connections for additional limit controls as shown in Fig. 20 page 29. These limit terminal connections will provide a "hard" lockout requiring a manual reset of the PRESTIGE Excellence control, or a “soft” lockout in which the PRESTIGE Excellence will automatically reset.

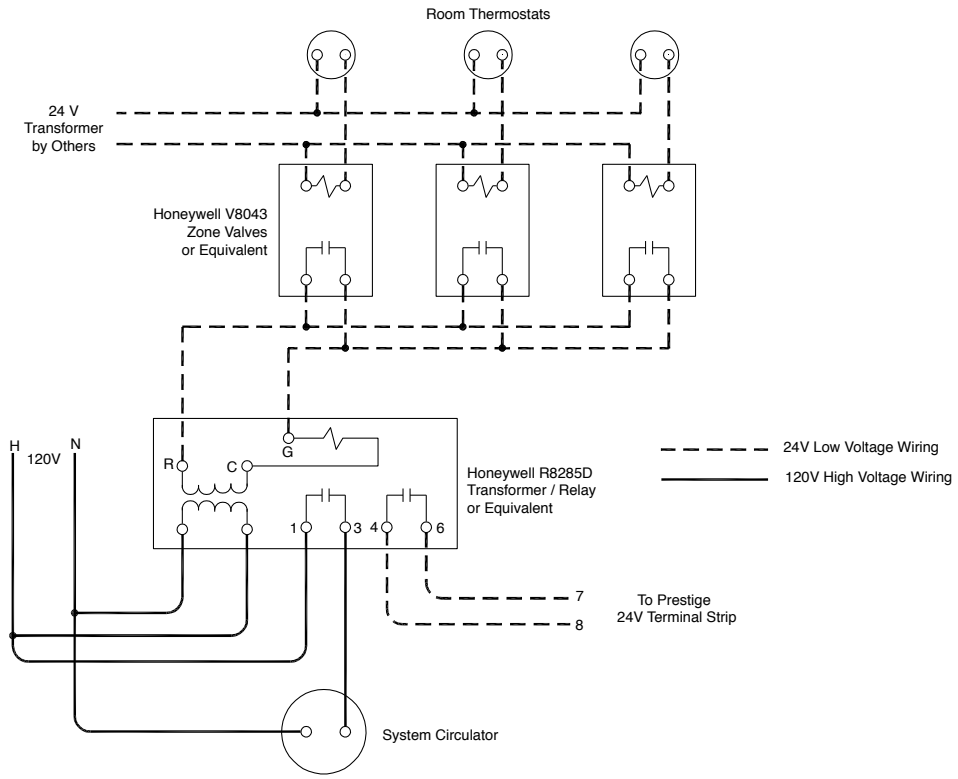
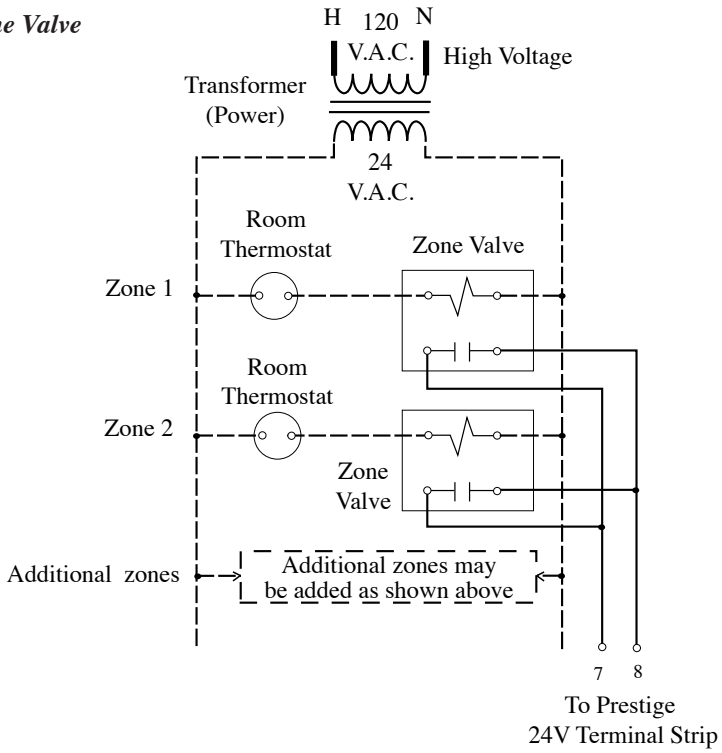


Fig. 21: Secondary System Circulator Wiring

4 Wire Zone Valve



3 Wire Zone Valve

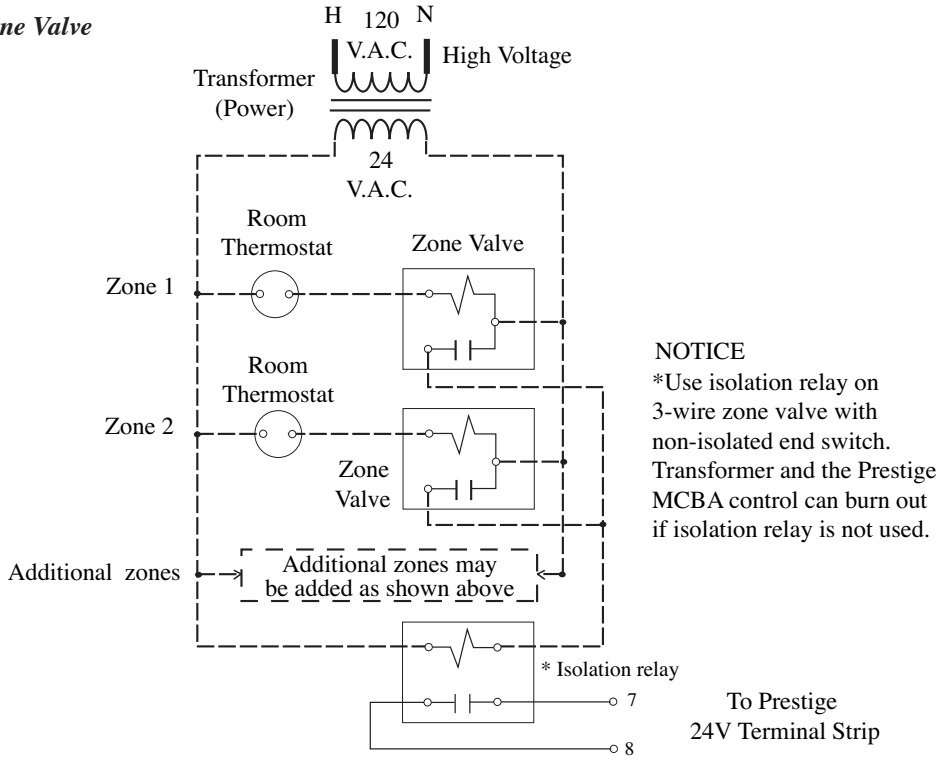


Fig. 22: Multiple Zone Field Wiring Using Zone Valves

Fig. 23: Field Wiring with Zone Circulators.

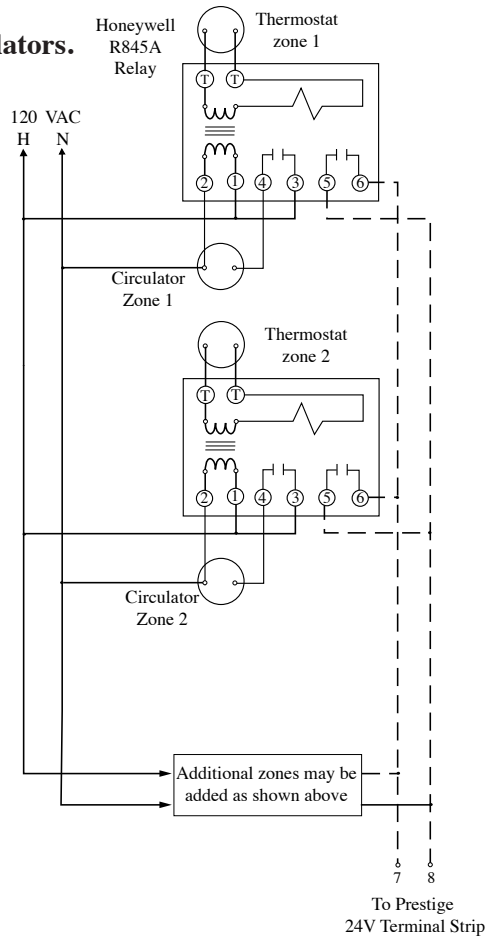
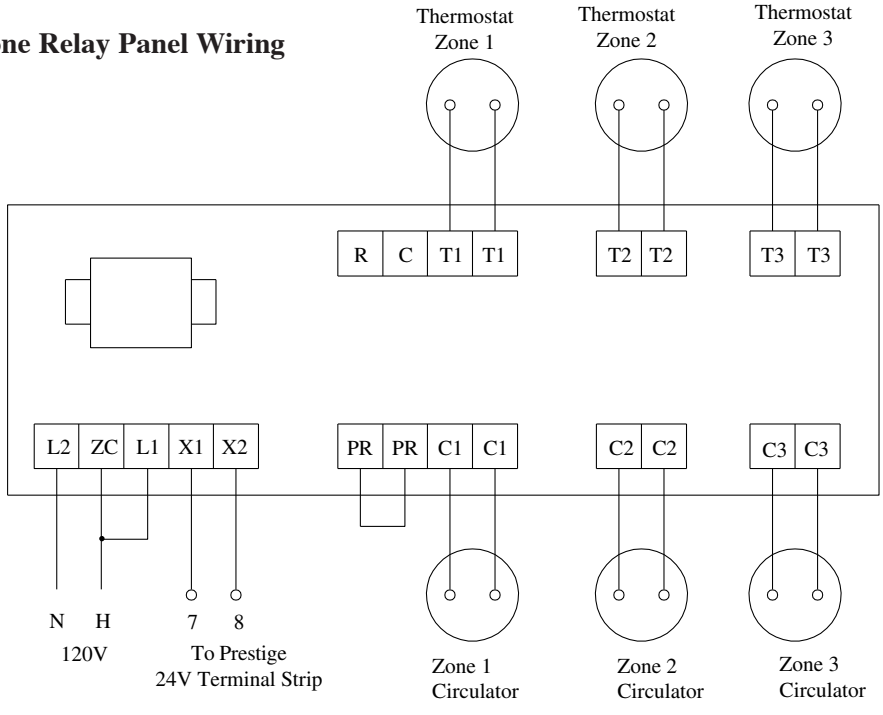


Fig. 24: Typical Zone Relay Panel Wiring



SECTION IX - Start-Up Preparation

Check Boiler System Water Chemistry

⚠ WARNING

Do not use petroleum-base cleaning or sealing compounds in the boiler system. Damage to seals and gaskets in the system components could occur, resulting in substantial property damage.

NOTICE

System water including additives must be practically non-toxic, having a toxicity rating or Class of 1, as listed in Clinical Toxicology of Commercial Products.

Water pH Level 6.0 to 8.0

Maintain the boiler water pH between 6.0 and 8.0. Check using litmus paper or contact a water treatment company for a chemical analysis.

If the pH does not meet this requirement, do not operate the PRESTIGE Excellence or leave the unit filled until the condition is corrected.

Water Hardness Less Than 7 Grains

For areas with unusually hard water (hardness above 7 grains) consult a water treatment company.

Chlorinated Water

Do not use the PRESTIGE Excellence to heat a swimming pool or spa directly.

Maintain the chlorine level of the water at levels considered safe for drinking.

Flush System to Remove Sediment

The installer must flush the boiler system to remove any sediment to allow proper operation of the PRESTIGE Excellence .

Flush the systems until the water runs clean and is free of sediment.

For boiler zoned systems, each zone should be flushed through a purge valve. Purge valves and isolation valves should be installed on each zone to allow proper flushing of the system.

Check and Test Antifreeze

For boiler systems containing antifreeze solutions, follow the antifreeze manufacturer's instructions in verifying the inhibitor level and to ensure the fluid characteristics are within specification requirements.

Due to the degradation of inhibitors over time, antifreeze fluids must be periodically replaced. Refer to the manufacturer of the antifreeze for additional instructions.

NOTICE

System water including additives must be practically non-toxic, having a toxicity rating or Class of 1, as listed in Clinical Toxicology of Commercial Products.

Use of Antifreeze in the Boiler System

⚠ WARNING

NEVER use automotive or ethylene glycol antifreeze or undiluted antifreeze in the primary system as freeze protection. This can cause severe personal injury, death or substantial property damage if ignored.

Determine the antifreeze fluid quantity using the system water content volume and following the antifreeze manufacturer instructions.

The water volume of the PRESTIGE Excellence is approximately 5 gallons (includes Boiler and DHW outer tank). Remember to include the volume of the expansion tank.

Check with local codes requirements for the installation of backflow preventers or actual disconnect from the boiler's cold water fill or make up water supply line.

NOTICE

Massachusetts Code requires a pressure reducer/backflow preventer if antifreeze is used.

Ensure the concentration of antifreeze to water does not exceed a 50/50 ratio.

NOTICE

System water, including additives, must be practically non-toxic, having a toxicity rating or Class of 1, as listed in Clinical Toxicology of Commercial Products.

⚠ CAUTION

Ensure the domestic inner tank of the PRESTIGE Excellence water heater is properly filled and pressurized prior to filling the boiler system. Reference the PRESTIGE Excellence water heater for proper guidelines on filling the inner tank. Failure to comply could result in damage of the inner tank.

Filling the Boiler System

1. Close the boiler drain valve located on the bottom of the unit and any manual or automatic air vent in the system.
2. Open all system isolation valves.
3. Fill the boiler system to correct system pressure. Correct pressure will vary with each application.

NOTICE

Typical residential system fill pressure is 12 psi. System pressure will increase when system temperature increases. Operating pressure of the system should never exceed 25 psi.

4. Purge air and sediment in each zone of the boiler system through the purge valve. Open air vents to allow air to be purged in the zones.
5. Once the system is completely filled and purged of all air and sediment, check the system pressure and check/repair any leaks.

⚠ WARNING

Unrepaired system leaks will cause continual makeup water to be added to the boiler. Continual makeup water could cause mineral buildup within the heat exchanger, reducing the heat transfer, causing possible heat buildup and eventual heat exchanger failure.

Check Low Water Cut-Off Device

- The PRESTIGE Excellence is provided with a factory installed LWCO device that measures system pressure of more than 10 psi.
- Remove the front jacket panel and check for continuity across the low water cut-off device wire terminals. The contacts should be closed when system pressure is greater than 10 psi. See item 5, on Fig. 27 page 63.

Check For Gas Leaks

⚠ WARNING

Prior to start-up and during initial operation, smell near the floor and around the unit for gas odorant or any unusual odor. Do not proceed with the start-up if there is any indication of a gas leak. Any leaks found must be repaired immediately.

⚠ WARNING

Propane installations only - The propane supplier mixes an odorant with the propane to make its presence detectable. In some cases the odorant can fade and the gas may no longer have an odor.

Prior to start-up of the unit and periodically after start-up have the propane supplier check and verify the odorant level.

Check Thermostat Circuit

- Disconnect the external thermostat wires from the 24V terminal strip on the wiring panel.
- Connect a voltmeter across the wire ends of the external thermostat wiring.
- Close each thermostat, zone valve and relay in the external circuit one zone at a time and check the voltage reading across the wire ends.
- There should **NEVER** be voltage measured at the wire ends.
- If voltage is measured at the panel under any condition, check and correct the external wiring.

NOTICE

In systems using 3-wire zone valves, backfeed of voltage to the unit is a common problem. Use an isolation relay to prevent voltage from the external circuit entering the PRESTIGE Excellence control panel.

- Reconnect the external thermostat wires to the 24V terminal strip on the wiring panel.

Inspection of Condensate Drain Assembly

1. Inspect and ensure the condensate drain assembly is properly installed as described on page 22 and shown in Fig. 15 on page 23.
2. Remove the plug from the condensate drain assembly and fill the trap with fresh water.

NOTICE

The condensate drain assembly must be filled with water when the PRESTIGE Excellence is in operation. The condensate drain assembly prevents flue gas emissions from entering the condensate line. Failure to ensure trap is filled with water could result in severe personal injury or death.

3. Re-Install plug in condensate drain assembly.

SECTION X - Start-Up Procedures

Final Checks Before Start-Up

☐ Read page 42 through 45 regarding the operation of the PRESTIGE Excellence control.

☐ Verify the PRESTIGE Excellence and the boiler system is full of water and all system components are correctly set for operation, including the minimum flow rate through the boiler, see page 70.

☐ Verify Start-Up Preparation items outlined on pages 34 thru 36 have been completed.

☐ Verify all electrical connections are correct and securely fastened.

☐ Inspect vent piping and combustion air inlet piping for signs of deterioration from corrosion, physical damage or sagging. Verify combustion air piping and vent piping are intact and correctly installed and supported. Reference the PRESTIGE Vent Supplement.

☐ Verify burner configuration - Propane only.

- Check for proper labeling on the gas valve and the rating label for propane configuration.
- If there is doubt on the burner configuration, remove the gas valve and check for proper propane orifice size 0.204" (#52). Refer to Fig. 17, page 27 for location of the propane orifice.

☐ Ensure the Condensate Drain Assembly is filled with water.

PRESTIGE Excellence Start-Up

1. Turn the ON-OFF switch located on the front control panel to the OFF position. Turn the electrical supply or any service switch to the unit in the ON position.
2. Read and follow the Operating Instructions outlined on page 39.

If PRESTIGE Excellence Does Not Start Correctly

1. Verify DHW (parameter 2) and CH (parameter 3) Systems are turned ON or set to "01". Read the Boiler Display Standby and Parameter Section of the manual starting on page 42 for more information.
2. Check for loose electrical connections, blown fuse (external or internal to the MCBA Control) or open service switch.
3. Check continuity across the L.W.C.O device for a closed circuit. See item 5 on Fig. 27, page 63.
4. Is the external limit control (if applicable) open? Ensure the external limit is reset to the closed position.
5. Is the gas supply valve(s) open at the unit and meter?
6. Is incoming gas supply pressure at the unit more than 5"w.c. and less than 13" w.c. for natural or propane with all gas appliances operating ON or OFF
7. Are the heating thermostats set below room temperature?

If none of these conditions correct the problem, refer to the PRESTIGE Trouble-Shooting Guide or contact Triangle Tube Tech Service.

Check the PRESTIGE Excellence and System

☐ Check Boiler Piping.

Check Boiler system piping and components for leaks. If found, shut down the unit and repair immediately.

Purge any remaining air from the system piping. Air in the system piping will interfere with circulation creating heat distribution problems and system noise.

☐ Check Vent Piping and Combustion Air Piping.

Check for gas-tight seal at every connection and seam of the venting and combustion air inlet piping.

⚠ WARNING

Venting system must be sealed gas-tight to prevent flue gas spillage and potential carbon monoxide emissions, which will result in severe personal injury or death.

☐ Check Gas Piping

Check around the unit for gas odor following the procedure outlined in this manual on Page 36.

⚠ WARNING

If any gas leaks are found or suspected, shut the unit down immediately. Use a gas detection device or bubble test to locate the source of the gas leak and repair at once. Do not operate the unit until the leak is corrected. Failure to comply with this procedure could result in severe personal injury, death or substantial property damage.

☐ Verify Flame Pattern and Combustion

Check the flame pattern through the inspection port of the heat exchanger. The flame should be blue and stable. The flame should be the length of the burner head openings.

⚠ WARNING

The combustion testing and adjustments must be performed by a qualified installer, service agency or the gas supplier. All combustion measurements must be perform with calibrated equipment to ensure proper reading and accuracy.

Test for CO2 or O2 and for CO during high firing rate. To manually place the boiler into high fire mode, reference page 42, the combustion reading should be within the range listed in Table 2. **The CO level should not exceed 100 ppm when combustion is correct.**

⚠ WARNING

The combustion levels should be measured at high firing rate, refer to page 42 of the PRESTIGE Excellence control section on how to set the firing rate. If the combustion levels are not within the range given in Table 2 for the firing rate, shut the boiler down and contact Triangle Tube Engineering Department. Failure to comply with this requirement could result in severe personal injury, death or substantial property damage.

☐ Measure Input - Natural Gas Only

Table 2: Recommended Combustion Levels

	Natural Gas	Propane
O2 Min.	2.30%	2.70%
O2 Max.	5.30%	4.70%
CO2 Min.	8.80%	10.70%
CO2 Max.	10.50%	12.00%
CO Max	100 ppm	100 ppm

1. Ensure the boiler is firing at maximum firing rate. To manually place the boiler into high fire mode, reference page 42.
2. Operate the unit for approximately 10 minutes.
3. Turn off all gas appliances within the building, except the PRESTIGE Excellence.
4. At the gas meter, record the time required to use one cubic foot of gas.
5. Calculate Natural gas input using the following equation:

   3600 x 1000 / number of second recorded for one cubic foot of gas = BTU/H.
6. The BTU/H calculated should approximate the input rating listed on the unit.

FOR YOUR SAFETY READ BEFORE LIGHTING

WARNING **If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of**

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. **DO NOT** try to light the burner by hand.

B. BEFORE OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

C. Use only your hand to turn the external manual gas valve. Never use tools. If the valve will not turn by hand, don't try to repair it; call a qualified service technician. Force or attempted repair may result in a fire or explosion.

D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above. This appliance is equipped with an ignition device which automatically lights the burner. DO NOT try to light the burner by hand.
2. Set room thermostat(s) to lowest setting. Turn the external manual gas valve handle clockwise ↷ "CLOSE" (valve handle shall be perpendicular to gas piping).
3. Turn the service switch on the PRESTIGE Excellence control panel OFF.
4. Remove the front jacket panel on the unit.
5. Turn the external manual gas valve handle counter clockwise ↶ to "OPEN" gas supply (valve handle shall be parallel to gas piping).
6. Wait five (5) minutes to clear out any gas. If you then smell gas in the jacket enclosure or around the unit, STOP! Follow "B" in the safety information above. If you don't smell gas, go to the next step.
7. Turn the service switch on the PRESTIGE control panel "ON".
8. Set room thermostat(s) to desired setting(s).
9. The PRESTIGE Excellence control panel display will show a sequence of numbers (0,1,2,3,4,etc.) as the left digit. Sequence digit 3 or 4 indicates the boiler is firing. Sequence digit 0 means there is no call for heat (all external thermostats are satisfied).
10. If the unit will not operate with a call for heat and the system piping is not hot, follow the instructions "To Turn Off Gas to Appliance", below and call your service technician or gas supplier.
11. Replace the front jacket panel. Make sure the panel is seated firmly in place and all mounting screws are tightened.

TO TURN OFF GAS TO APPLIANCE

1. Set the room thermostat to lowest setting.
2. Turn the service switch on the PRESTIGE Excellence control panel to "OFF"
3. Turn the external manual gas valve handle clockwise ↷ to "CLOSE".

Set Boiler CH Target Temperature

1. Press the MODE button until the display shows PARA. This is the parameter mode of the control.
2. Press the STEP button until the first digit on the display shows "4". The last three digits on the display shows the outlet water temperature setting (high limit).
3. Press the "+" or "-" button to change the setting of the outlet temperature (high limit).

NOTICE

If an outdoor sensor is used, then the setting of the Boiler CH Target temperature is the target temperature when the outdoor temperature is at or below 0ºF. When the outdoor temperature is higher than 0ºF the PRESTIGE Excellence control will calculate the target temperature between the minimum and maximum temperature settings.

4. Press the "STORE" button to save the setting.

Operation Verification - Space Heating

NOTICE

Digits and characters shown as [8888], in the following outline, represent the control panel display. The last three digits on the display is the measured boiler water temperature and may differ from what is shown in the manual.

1. Refer to Set DHW Storage Temperature outline on page 41 and set the DHW to 68 from the factory setting of 140.
2. Set the room thermostat to the lowest setting.
3. Turn off power to the boiler, wait a few seconds and turn on power to the boiler.
4. The following displays should occur:

   [U1.22] Software version

   [A140] Self check on power up

   [0140] No call for heat

NOTICE

If the water heater storage temperature is below the setpoint of Parameter 1, the boiler will operate in DHW mode until setpoint is reach. Once the DHW mode is complete, proceed to step 5.

5. Initiate a call for heat by raising the set point of the room thermostat to the highest setting. The following display should occur.

   [5140] This is a fan / air flow check. The burner blower will be energized momentarily prior to the prepurge cycle.

   [1140] This is the prepurge cycle. The boiler blower and the CH (Central Heating) circulator become energized. The blower has a 10 second prepurge cycle.

   [2140] This is the ignition cycle. The control module will energize and open the gas valve and begin the spark for ignition.

   - If the burner flame proves the burner will continue to fire at an ignition fan speed for approximately 10 seconds to stabilize the flame.
   - If the burner flame is not proven the control module will repeat the ignition sequence. If the flame is not proven after 5 attempts the control will lockout and the display will show [E-02]
   - To verify flame failure lockout, close the manual shut off valve on the gas supply piping to the boiler and repeat ignition sequence. When verification is completed, ensure the manual shut off valve is returned to the open position.

[3140] This is the normal CH operation cycle. After the flame is proven and stabilized the burner will fire at low input for approximately 1 minute. After this time period, the control module will begin to modulate the burner firing rate based on actual boiler outlet temperature and the set point temperature.

6. Allow the boiler to operate and allow the boiler outlet temperature to reach the set point temperature.

   [6180] This begins the burner shutdown and post purge cycle. The CH circulator will continue to run until the room thermostat is satisfied.

7. Lower the room thermostat set point below the room temperature to end the call for heat.

   [1180] This begins a post purge cycle. When the room thermostat is satisfied, the boiler will shutdown. The control module will close the gas valve and the blower will continue for 30 seconds for a post purge cycle before shutting down. If another call for heat is initiated, the boiler will remain off for an additional 30 seconds before starting a new ignition sequence.

   [7180] The CH circulator will continue for a 1 minute post pump cycle.

8. Verify the operation of the boiler by repeating the operational sequence several times.

9. Return the room thermostat to a desired setting.

Set DHW Storage Temperature

1. Press the mode button until the display shows “PARA”. This is the Parameter mode of the control.

2. Press the STEP button until the first digit on the display shows “1”. The last three digits on the display shows the DHW storage temperature setting.

3. Press the “+” or “-” button to change the setting of the DHW storage temperature.

NOTICE

The DHW outlet temperature is controlled by the factory supplied mixing valve. A low DHW storage temperature will affect the overall listed DHW performance.

4. Press the “STORE” button to save the setting. Press the “MODE” button until the display shows “STBY”

Operation Verification - Domestic Hot Water

1. As outlined in the verification for space heating, repeat STEPS 2 through 4.

2. Reference Set DHW Storage Temperature outline and set the DHW to the factory setting of 140ºF. A DHW call for heat should be initiated and the following display should occur.

   [5180] This is a Fan/Air Flow Check. The burner blower will be energized momentarily prior to the pre-purge cycle.

   [1180] The prepurge cycle. The boiler blower and CH circulator become energized and the 10 second pre-purge cycle begins.

   [2180] The boiler will begin the ignition sequence. The same sequence of establishing flame, trail for ignition and attempts for ignition as described in the space heating applies for domestic hot water.

   [4180] This indicates normal operation for DHW. The burner will begin modulating its input based on the length of demand by the DHW setting. The burner will not go into the low input rate for the 1 minute flame stabilization period that occurs in CH mode.

3. Lower the DHW storage temperature as outlined in Set DHW Storage Temperature to satisfy the call for heat.

   [2180] The post purge cycle begins. The control module closes the gas valve and the blower continues for a 30 second post purge.

   [8180] The DHW will continue for a 30 second post pump cycle. If another DHW call for heat is initiated the boiler ignition sequence will begin immediately.

   [8180] Boiler is in standby MODE waiting for a CH or DHW call for heat.

4. Verify the DHW operation of the boiler by repeating the outline operation sequence several times.

5. Return the DHW storage temperature and room thermostat to the desired setting.

Boiler Control Display

Standby Mode

This is the standard mode for the PRESTIGE Excellence. The control automatically returns to this mode after 20 minutes if no keys have been pressed on the display. Any parameters that were modified are then stored.

The first character shows (on left side of display) the current status of the boiler depending on the condition of both the boiler and the burner. The last 3 characters indicate the boiler supply temperature.

If the burner is blocked due to a “soft” lockout, the display alternates between a 9 followed by the boiler supply temperature and a “b” with a two digit error code.

TO TEMPORARILY PLACE THE BURNER INTO HIGH FIRE TEST MODE: press the MODE button until “Stby” is displayed. Then press and hold both the MODE and “+” button simultaneously until the first digit flashes “H”.

While in the test mode:

- high limit will function
- boiler circulator will function
- Internal 3-way valve will be diverted to CH MODE.
- the test mode will time out in approximately 10 minutes

TO TEMPORARILY PLACE THE BURNER INTO LOW FIRE TEST MODE: press the MODE button until "StbY" is displayed. Then press and hold both the MODE and "-" button simultaneously until the first digit flashes "L".

TO DEACTIVATE THE HIGH OR LOW FIRE TEST MODE: Press and hold the "+" and "-" button simultaneously to deactivate the high or low fire test mode. While in the "StbY" mode:

Display	Boiler function
H 180	Test function: Burner on, high fire mode
L 180	Test function: Burner on, low fire mode

NOTICE

If the "+" button is held in the CH system (parameter 3) will be turned OFF and the display will show "cOFF". Press and hold the "+" button to turn the CH system back ON, the display will show "c" followed by CH set point temperature (parameter 4) or CH target temperature. If the "-" button is held in while in the "StbY" mode domestic system (parameter 2) will be turned OFF and the display will show "dOFF". Press and hold "-" button to turn the domestic system back ON, the display will show "d" followed by domestic set point temperature (parameter 1)

Standby Mode Display

Display	Boiler function
0 180	STANDBY, no demand for heat
1 180	Fan prepurge or post purge cycle
2 180	Ignition sequence
3 180	Burner ON for space heating (CH)
4 180	Burner ON for domestic hot water (DHW)
5 180	Pre-check for air flow prior to prepurge cycle
6 180	Burner OFF due to reaching temperature setpoint
7 180	Space Heating (CH) post pump cycle
8 180	Domestic hot water (DHW) post pump cycle
9 180	Burner blocked:
b 18	Supply temperature too high (202°F) . Burner will remain OFF until temperature drops below 200°F
b 19	Return temperature too high (202°F). Burner will remain OFF until temperature drops below 200°F
b 24	Return temperature is higher than supply temperature. Burner will remain OFF until corrected.
b 25	Supply temperature increased too quickly. Burner will remain OFF for a 10 minute period. Burner will recycle, increasing waiting period 1 minute for a max. 15 minutes
b 26	Factory supplied LWCO device or external limit (terminals 15 & 16) is OPEN. Burner off for 150 seconds, auto reset.
b 28	No blower signal
b 29	Blower signal present with no demand, Burner will remain OFF until condition terminates
b 30	Temperature difference between the supply and return is more than 72°F. Burner will remain OFF for 150 seconds. Burner will recycle increasing wating period 1 minute for a max. 20 cycle.
b 33	Indirect water heater temperature sensor is short-circuited. Burner OFF until corrected.
b 35	Flue temperature sensor is short-circuited. Burner OFF until corrected
b 38	Indirect water heater temperature sensor is "open" or disconnected. Burner OFF until corrected.
b 40	Flue temperature senor is "open" Burner OFF until corrected.
b 52	Flue temperature greater than 240°F but less than 250°F. Burner off for 150 seconds
b 65	Wait for the blower to start
b 116	Power frequency deviation
b 118	Flame current signal lost

Setting The Boiler Parameters

Parameter mode PAR.A

To access PARAMETER mode when the system is in STANDBY mode, press the MODE button once.

Key:	Display	
MODE	PAR.A	Pressing MODE once

To scroll through the list of parameters, simply press the "STEP" button. The first digit is the parameter number followed by the parameter value. To modify a parameter value, use the + or - keys. Then press "STORE" to save the value you just changed. The display flashes once to confirm the data has been stored.

To activate the parameters you changed, press RESET. However, if you do not press a key, the system returns to STANDBY mode after 20 minutes and automatically stores the changes.

Key:	Display	Description of parameters
STEP	1.140	Domestic Hot Water Setting **(See Note 1)**
STEP	2.01	Domestic Hot Water Setup **(See Note 2)**
STEP	3.01	Space Heating Mode **(See Note 3)**
STEP	4.180	Maximum temperature in space heating (CH) mode. In applications using an outdoor sensor, this is the boiler outlet target temperature at an outdoor temperature of 0°F or below.

Note 1: This parameter is factory set to 140ºF. It is important to note the control adds 46ºF to this setting, therefore the actual domestic hot water setting is 140ºF + 46ºF = 186ºF.

Note 2: This parameter should not be changed from the factory setting of "01". The performance of the DHW will be affected and can become unreliable.

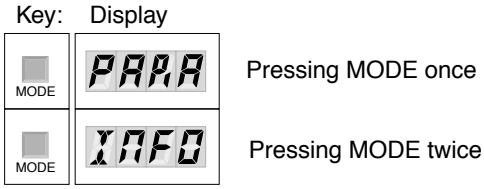
Note 3: This parameter should not be changed from the factory setting of "01". The performance of the CH (Central/Space Heating) will be affected and can become unreliable.

Key:	Display	
MODE	PAR.A	Pressing MODE once
MODE	INFO	Pressing MODE twice

Accessing Boiler Information

Information mode

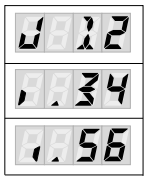
To switch from STANDBY mode to INFORMATION mode, press MODE twice.



Press STEP until the system displays the information you need. The point located behind the first position flashes to indicate that the boiler is in INFO mode.

NOTICE

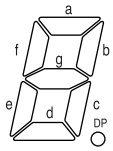
The ignition counters and burner hours are split into three two digit numbers. For example:



Write the numbers down from left to right to arrive at 123,456 CH ignitions.

NOTICE

In the INFO Mode a temperature reading of -22 typically indicates an "open" circuit. A temperature reading of 240 typically indicates a short-circuit.



Display Digit Segments

Information Mode Items

Item	Value
1	Supply Water Temperature ºF
2	Return Water Temperature ºF
3	DHW Water Temperture ºF (Optional)
4	Outdoor Temperture ºF (Optional)
5	Flue Temperature ºF
6	Boiler Setpoint ºF
7	Rate of Increase of Supply Water Temperature ºF/Sec.
8	Rate of Increase of Return Water Temperature ºF/Sec.
9	Rate of Increase of DHW Water Temperature ºF/Sec.
A	Not Used
B	Not Used
C	Not Used
D	Not Used
E	Ionization Current in micro-ampere
F	Analog Input Voltage
G	Not Used
H	MCBA Internal Temperture ºF
I	CH Ignition Counter (100 thousands / 10 thousands)
Seg. e	CH Ignition Counter (thousands / hundreds)
Seg. c	CH Ignition Counter (ten / ones)
J	CH Burner Hours (100 thousands / 10 thousands)
Seg. e	CH Burner Hours (thousands / hundreds)
Seg. c	CH Burner Hours (ten / ones)
L	DHW Ignition Counter (100 thousands / 10 thousands)
Seg. e	DHW Ignition Counter (thousands / hundreds)
Seg. c	DHW Ignition Counter (ten / ones)
N	DHW Burner Counter (100 thousands / 10 thousands)
Seg. e	DHW Burner Counter (thousands / hundreds)
Seg. c	DHW Burner Counter (ten / ones)

Error (Hard Lockout) Mode

If a system fault occurs while the boiler is running, the system goes into lockout and the display starts to flash with the first digit as an E and the next two digits give the code for this fault.

For a detailed description of the error codes, reference the PRESTIGE Troubleshooting Guide.

⚠ CAUTION

The boiler freeze protection feature is disabled during a Hard Lockout, however the CH circulator will operate and the 3-way valve will open to the CH system.

⚠ CAUTION

During a hard lockout or low water condition the boiler will not re-start without service. If the heating system is left unattended in cold weather appropriate safeguards or alarms should be installed to prevent property damage.

Display	Hard Lockout
E 00	Flame detected prior to burner startup
E 02	Failed ignition after 5 attempts
E 03	Gas valve harness not properly connected
E 04	Power supply lost after lockout occured
E 05	Internal control failure
E 06	Internal control failure
E 07	Internal control failure
E 08	Internal control failure
E 09	Internal control failure
E 11	Internal control failure
E 12	External limit (terminals 13 & 14) is OPEN
E 13	Internal control failure
E 14	Contact Triangle Tube Service Department
E 15	Internal control failure
E 16	Internal control failure
E 17	Internal control failure
E 18	Supply Temperature exceeds 212°F
E 19	Return Temperature exceeds 212° F
E 24	Return Temperature is higher than supply temperature
E 25	Supply Temperature increased too rapidly
E 28	No blower signal present
E 29	Blower signal does not reset to zero
E 31	Supply Temperature sensor is short circuited
E 32	Return Temperature sensor is short circuited
E 35	Flue Temperature sensor is short circuit
E 36	Supply Temperature sensor is OPEN
E 37	Return Temperature sensor is OPEN
E 40	Flue Temperature sensor is OPEN
E 44	Internal control failure
E 52	Flue Temperature exceeds 250° F
E 60	Internal control error - failure to read parameters
E 61	Internal control failure
E 65	Inadequate power supply to the fan
E113	Invalid power frequency
E115	Internal control failure
E122	Supply or Return Temperature sensor drift
E123	Supply or Return Temperature failure
E124	Supply or Return Temperature not changing

SECTION XI - Outdoor Reset Control

The boiler setpoint for a heating call can be fixed or vary with the outdoor temperature. If the application requires a constant supply temperature from the boiler, the outdoor temperature sensor should not be connected to the boiler. If an outdoor temperature sensor is connected to the boiler, the outdoor reset function is automatically enabled and will vary the CH setpoint with the change in outdoor temperature. The outdoor reset function has no affect on the DHW setpoint during a domestic call.

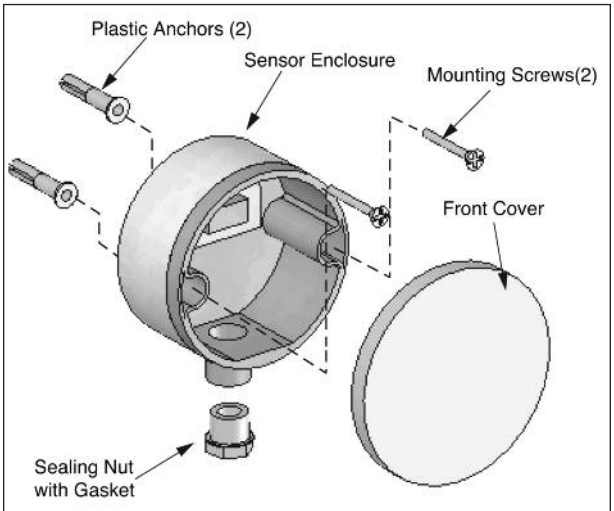


Fig. 25: Sensor Enclosure and Components

Mounting the Outdoor Sensor

1. Remove the front cover and mounting screws / anchors from the sensor enclosure.
2. When mounting the enclosure the exterior wall selected should represent the heat load of the building. Typically a northern or northeastern wall will suit most buildings. A southern facing wall may suit buildings that have large glass walls or windows on the southern face.
3. Ensure the sensor enclosure is shielded from direct sunlight or the effects of heat or cold from other sources (exhaust fans, appliance vents...) to prevent false temperature sensing.
4. Mount the sensor enclosure at an elevation on the exterior wall to prevent accidental damage or tampering.
5. Avoid mounting the enclosure in areas subjected to excessive moisture.
6. Once an area on the exterior wall has been determined, to affix the enclosure use the enclosure as a template to mark the location of the mounting screws.
7. Using a 3/16” drill bit, drill 2 pilot holes on the marked locations.
8. Tap the enclosed plastic anchors into the pilot holes. Use care not to damage the anchors.
9. Mount the sensor enclosure using the screws provided.

Wiring the Sensor

1. Remove the sealing nut and sealing gasket from the sensor enclosure.
2. Route two 18 gauge wires through the sealing nut and gasket. Connect the wires to the sensor terminals 1 and 2.
3. Re-insert the sealing gasket and tighten the sealing nut to the sensor enclosure.
4. Route the sensor wire back to the PRESTIGE Solo boiler, ensuring the wires are not run parallel to telephone or power cables.

NOTICE

If the sensor wires are located in an area with sources of potential electromagnetic interference (EMI) the sensor wires should be shielded or the wires should be routed in a grounded metal conduit. If using shielded cable, the shielding should be connected to the common ground of the unit.

5. Connect the sensor wires to the outdoor sensor terminals on the 24V terminal strip located inside the boiler enclosure (see boiler wiring diagram, Fig. 20 page 29).

Summer / Winter Switch at Boiler

If required the CH (Central Heating) system can be turned off at the boiler, similar to manual summer / winter switch by press/hold the "+" button while in the "StbY" mode, the display will show "cOFF". Press/hold the "+" button to turn the CH system back on, the display will show "c" followed by CH set point temperature (Parameter 4) or CH target temperature.

⚠ WARNING

If a parameter setting is changed but the STORE button is not pressed to save the setting, the MCBA will automatically store the setting after 20 minutes. Ensure all parameters are at their factory settings or appropriately revised for the application prior to commissioning the boiler. Failure to comply could result in erratic or unreliable operation of the Prestige boiler.

NOTICE

Once a parameter setting has been revised and stored pressing the STEP button will display the setting of the next parameter without showing P_XX. To avoid confusion, it is advisable to continue pressing the STEP button until Parameter 46 is reached. The next press of the STEP button will cause the display to roll over to Parameter 1. Continue pressing the STEP button until the next parameter to be adjusted is reached and revise the setting.

Adjusting Outdoor Reset Curve

Parameters 4, 10, 11, & 12 define the settings of the outdoor reset curve. See Graph 1 and Table 3, page 50 for an example of modifying the outdoor reset curve.

CH Maximum Boiler Operating Setpoint (Parameter 4)

Factory Setting	Minimum Setting	Maximum Setting
186°F	86°F	194°F

If an outdoor temperature sensor is not connected to the boiler, the boiler setpoint for a heating call will be set to the CH Maximum Boiler Operating Setpoint. If an outdoor temperature sensor is connected, the CH Maximum Boiler Operating Setpoint becomes the boiler setpoint on the CH Reset Curve Coldest Day. The outdoor temperature can be monitored on the boiler display via item 4 of the INFO menu.

CH Minimum Boiler Operating Setpoint (Parameter 10)

Factory Setting	Minimum Setting	Maximum Setting
86°F	60°F	140°F

This parameter is not applicable if an outdoor sensor is not connected to the boiler. When an outdoor temperature sensor is connected, the CH Minimum Boiler Operating Setpoint becomes the boiler setpoint on the CH Reset Curve Warmest Day.

CH Reset Curve Coldest Day (Parameter 11)

Factory Setting	Minimum Setting	Maximum Setting
00°F	(-)22°F	50°F

This parameter is not applicable if an outdoor sensor is not connected to the boiler. When an outdoor temperature sensor is connected, the CH Reset Curve Coldest Day is the coldest design temperature of the heating system.

CH Reset Curve Warmest Day (Parameter 12)

Factory Setting	Minimum Setting	Maximum Setting
64°F	60°F	78°F

This parameter is not applicable if an outdoor sensor is not connected to the boiler. When an outdoor temperature sensor is connected, the CH Reset Curve Warmest Day is the warmest design temperature of the heating system.

Entering MCBA Access Code

The installer must enter the MCBA Access Code to adjust the advanced parameter settings of the MCBA. The Access Code can be entered as follows:

1. Press the MODE button until the display shows **STBY**.
2. Press and hold the MODE and STEP buttons together for 2 to 3 seconds until the display shows **CODE**.
3. Press the STEP button once and the display will show **C_XX** where **XX** represents a random number.
4. Press the "+" or "–" buttons to change the number displayed to read **C_54**.. Press and hold the "+" or "–" button to rapidly change the number.
5. When the display reads **C_54**, press the STORE button to save the Access Code. The display should flash to indicate that the Access Code was saved.

After the Access Code has been entered, the advanced parameters can be accessed by pressing the MODE button until the display shows **PARA**. Once the display shows **PARA**, press the STEP button to reach the appropriate parameter. The display should follow the following sequence:

Press STEP once- **1148**
Press STEP x2 - **2_01**
Press STEP x3 - **3_01**
Press STEP x4 - **4186**
Press STEP x5 - **P_10**
Press STEP x6 - **P_11** Etc.....

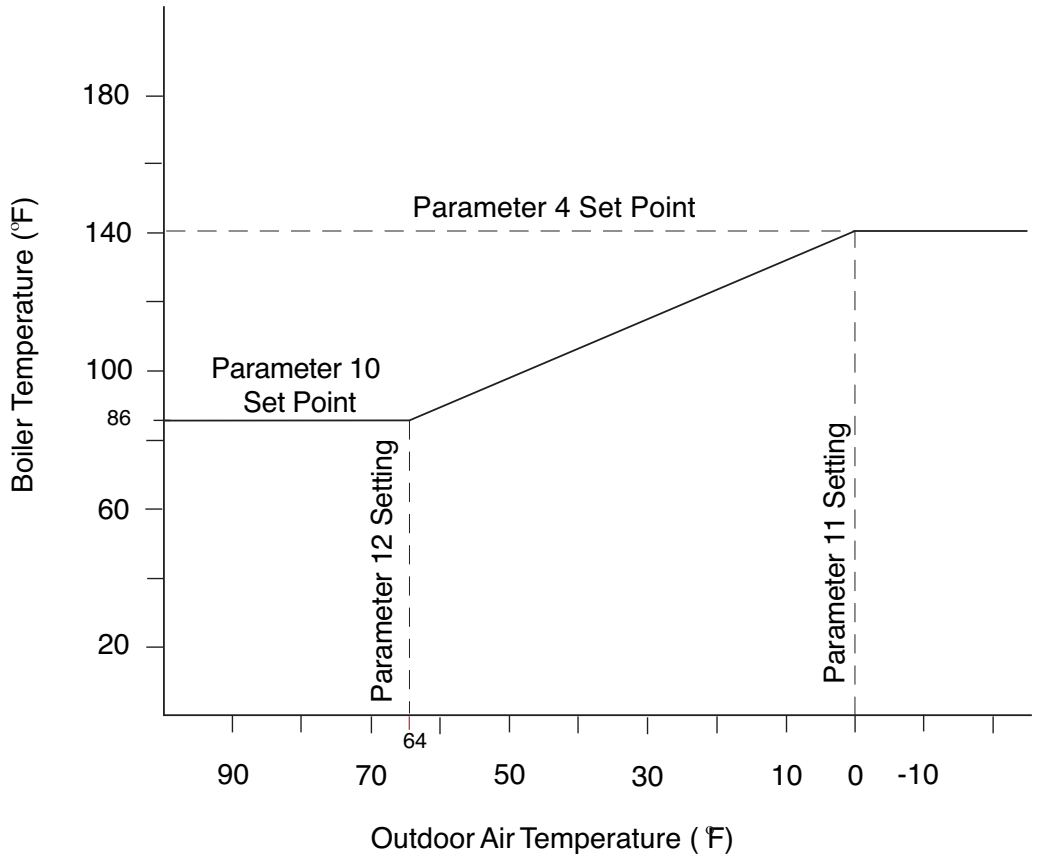
After Parameter 4, the display will show P followed by the parameter number. Once a particular parameter is reached, the display will change to show the current setting of that parameter.

NOTICE

The actual parameter values displayed on the display may vary depending on the application, but the sequence will always occur in the order shown.

Changing a Parameter Setting

1. Use the "+" or "–" button to change the parameter setting.
2. Press the STORE button to save the change. The display should flash to indicate that the change was saved.
3. Press the RESET button to leave the Access Code mode.



Graph 1: Outdoor Air Temperature Reset Curve (Example)

Table 3: Outdoor Air Temperature Reset (Example)

Outdoor Temperature	Boiler Target Temp. Based on Outdoor Temp.
0°F or Lower	140°F
23°F	122°F
40°F	108°F
68°F or Higher	86°F

Graph 1 illustrates Parameter 4 adjusted to 140°F target temperature at 0°F outdoor air temperature.

Note: Factory setting of Parameter 4 is 186°F.

SECTION XII - External Modulating Control

The boiler can directly accept an analog 0-10 VDC signal to control the firing rate from an external modulating boiler controller.

Wiring the Modulating Controller

Run two 18 gauge wires from the external modulating boiler controllers 0-10 VDC boiler output to the external input terminals on the low voltage terminal strip inside the boiler. (see boiler wiring diagram, Fig. 20 page 29). This signal will both enable and modulate the boiler. No wiring is required at the thermostat (T-T) terminals 7 and 8 of the boiler.

NOTICE

Ensure that the polarity of the connections from the external modulating boiler controller to the boiler is correct. Reversed polarity could lead to erratic and/or no response from the boiler controller.

Parameter Adjustment

The Prestige MCBA control module must be programmed to accept the 0-10 VDC signal from the external modulating boiler control.

CH Operating Signal Section (Parameter 45)

Factory Setting	Revised Setting
00	02

Follow the procedure for entering the MCBA Access Code on page 49, and then change the setting of Parameter 45 from the factory setting of 00 to 02.

NOTICE

Ensure that Parameter 4 is set above the highest setpoint of the external modulating control. Parameter 4 is a boiler high temperature limit when using an external modulating controller.

Programming of External Modulating Control

The external modulating control must be programmed to send 1.8 VIC to enable the boiler and run it at low fire, and 10 VIC to run the boiler at high fire. Once the control enables the boiler, it must wait 2 minutes to allow the burner to stabilize before modulating the boiler.

Factory Setting Parameters

1	140°F	DHW Setting
2	01	DHW Application Selection
3	01	CH Application Selection
4	186°F	CH Maximum Boiler Operating Setpoint
10	86°F	CH Minimum Boiler Operating Setpoint
11	00°F	CH Reset Curve Coldest Day
12	64°F	CH Reset Curve Warmest Day
13	-22°F	Frost Protection Setpoint
18	32°F	CH Block Temperature Setting
19	00 Minutes	Boost Feature Setting
20	00°F	Parallel Shift Value
21	46°F	Setpoint Value Addition for DHW
32	01 Minutes	CH Circulator Post Pump Time Period
33	03 x 10.2 Sec.	DHW Circulator Post Pump Time Period
38	02°F	DHW On Differential
39	06°F	DHW Off Differential
40	03 x 10.2 Sec.	CH Call Blocking Time
41	00 x 10.2 Sec.	DHW Call Blocking Time
42	00 x 10.2 Sec.	DHW to CH Call Blocking Time
43	00 Minutes	DHW Priority Timeout
45	00	CH Operating Signal Selection
46	02	DHW Operating Signal Selction

SECTION XIII- Check-Out Procedures

NOTICE

Perform the following check-out procedures as outlined and check off items as completed. When procedures are completed, the installer should complete the installation record on page 53.

Check-out Procedures

- ☐ Boiler system water chemistry checked and verified as outlined on page 34.
- ☐ The boiler air vent and any automatic air vents placed within the system are open one full turn.
- ☐ Air is purged from the heating zones and boiler system piping.
- ☐ Burner has been confirmed as properly configured for Propane application, as outlined on page 26 (If applicable).
- ☐ Thermostat circuit wiring checked and verified that no voltage is present to the low voltage terminals as outlined on page 36.
- ☐ Operating Instructions on page 39 were followed during start-up.
- ☐ Combustion levels and flame pattern verified as outlined on page 38.
- ☐ Measured the rate of input on Natural Gas as outlined on page 38.
- ☐ Checked the incoming gas pressure to the PRESTIGE to ensure a minimum pressure of 5”w.c during flow conditions to all gas appliances and a maximum pressure of 13”w.c during non-flow conditions for Natural and Propane.
- ☐ Adjusted balancing valves and system limit controls to provide design temperatures to the primary space heating system.
- ☐ In multiple zone applications, adjusted for correct flow of boiler water to each zone.
- ☐ Checked and verified room thermostat(s) function properly and the thermostat(s) heat anticipator (if used) was properly set.
- ☐ Observed several operating cycles for proper operation of the PRESTIGE Excellence and the system.
- ☐ Set the room thermostat(s) to the desired room temperature.
- ☐ Reviewed all instructions shipped with the PRESTIGE Excellence with the homeowner or maintenance personnel.
- ☐ Completed the Installation Record on page 54.
- ☐ Ensure all manuals and other documentation are returned to the Installation envelope and given to the owner for safekeeping.

SECTION XIV - Installation Record

PRESTIGE Excellence Model Number: _____

Serial Number: _____

Date of Installation: _____

Fuel: ☐ Natural Gas ☐ Propane

Measured Rate of Input: _____ Btu/hr

Combustion Readings:

CO_2 _____ %

O_2 _____ %

CO _____ ppm

The following items were completed during installation:

- ☐ Installation instructions have been followed and completed
- ☐ Check-out procedures have been followed and completed
- ☐ Information regarding the unit and installation received and left with owner / maintenance personnel.

Installer Information

(Company) _____

(Address) _____

(Address) _____

(Phone Number) _____

SECTION XV - Maintenance Schedule

Service Technician

At least on an annual basis the following maintenance should be performed by a qualified service technician:

General

- Attend to any reported problems.
- Inspect the interior of the boiler jacket area; clean and vacuum if necessary.
- Clean the condensate drain assembly and fill with fresh water.
- Check for leaks: water, gas, flue and condensate.
- Verify flue vent piping and air inlet piping are in good condition, sealed tight and properly supported.
- Check boiler water pressure, piping and expansion tank.
- Check control settings.
- Check ignition electrode (sand off any white oxide; clean and reposition).
- Check ignition wiring and ground wiring.
- Check all control wiring and connections.
- Check burner flame pattern (stable and uniform) and flame.

Additional items if combustion or performance is poor:

- Clean heat exchanger and flue ways.
- Remove burner assembly and clean burner head using compressed air only.

Once the maintenance items are completed, review the service with the owner.

Owner Maintenance

Periodically:

- Check the area around the unit.
- Check and remove any blockage from the combustion air inlet and ventilation openings.
- Check the temperature/pressure gauge.

Monthly:

- Check vent piping.
- Check combustion air inlet piping.
- Check the pressure relief valve.
- Check the condensate drain system.

Every 6 months:

- Check boiler piping and gas supply piping for corrosion or potential signs of leakage.
- Operate the pressure relief valve.

⚠ WARNING

Follow the maintenance procedures given throughout this manual. Failure to perform the service and maintenance or follow the directions in this manual could result in damage to the PRESTIGE Excellence or in system components, resulting in severe personal injury, death or substantial property damage.

SECTION XVI - Maintenance Procedures

Maintenance Procedures

⚠ WARNING

The PRESTIGE Excellence should be inspected and serviced annually, preferably at the start of the heating season, by a qualified service technician. In addition, the maintenance and care of the unit as outlined on page 55 and further explained on pages 56 through 61 should be performed to assure maximum efficiency and reliability of the unit. Failure to service and maintain the PRESTIGE Excellence and the system components could result in equipment failure, causing possible severe personal injury, death or substantial property damage.

NOTICE

The following information provides detailed instruction for completing the maintenance items outline in the maintenance schedule on page 55. In addition to this maintenance, the PRESTIGE Excellence should be serviced at the beginning of the heating season by a qualified service technician.

Reported Problems

Any problems reported by the owner should be checked, verified and corrected before proceeding with any maintenance procedures.

Check Surrounding Area

Verify that the area surrounding the PRESTIGE Excellence is free of combustible / flammable materials or flammable vapors or liquids. Remove immediately if found.

Verify that combustion air inlet area is free of any contaminates. Refer to the list of potential materials listed on page 5 of this manual. If any of these products are in the area from which the unit takes its combustion air, they must be removed immediately or the combustion air intake must be relocated to another area.

Inspect Burner Area

Remove the boiler front jacket panel and venturi inlet elbow.

Vacuum any dirt or debris from the burner/blower components.

Re-install venturi inlet elbow and front jacket panel when completed.

⚠ WARNING

Do not use solvents to clean any of the burner components. The components could be damaged, resulting in unreliable or unsafe operation.

Check System Piping

Inspect all piping (water and gas) on the boiler system for leaks and verify that the piping is leak free and properly supported.

Inspect the fittings and components on the unit and verify they are leak free.

⚠ WARNING

Eliminate all boiler water system leaks. Continual fresh make-up water will reduce the heat exchanger life causing boiler failure. Leaking water may also cause severe property damage to the surrounding area. Inspect the gas supply piping using the procedure outlined on Page 38.

Clean Condensate Drain Assembly

1. Loosen the slip ring nut from the condensate drain assembly disconnecting the assembly from the boiler.
2. Empty any water from the trap and drain assembly. Flush with fresh water as necessary to clean.
3. Check the drain piping from the condensate drain assembly to the drain. Flush to clean as necessary.
4. Reassemble the condensate drain assembly onto the boiler by tightening the slip ring nut with rubber seal onto the boiler. Hand tight only.
5. Remove the fill plug on the condensate drain assembly and fill with water. See Fig. 15 on page 23.
6. Replace the fill plug on drain assembly.

Check Ventilation Air Openings

Verify that all ventilation openings to the mechanical room or building are open and unobstructed. Check the operation and wiring of any automatic ventilation dampers.

Check and verify the vent discharge and the combustion air intake are free of debris and obstructions.

Inspect Vent and Combustion Air Piping

Visually inspect the venting system and combustion air piping for blockage, deterioration or leakage. Repair any deficiencies.

Verify that the combustion air inlet piping is connected, sealed and properly supported.

⚠ WARNING

Failure to inspect the vent system and combustion air inlet piping and to have any conditions repaired, can result in severe personal injury or death.

Check Boiler System

Verify all system components are correctly installed and operating correctly.

Check the cold fill pressure for the system, typical cold water fill pressure is 12 psig.

Verify the system pressure, as the unit operates at high temperature, to ensure the pressure does not exceed 25 psig. Excessive pressure reading indicates expansion tank sizing is incorrect or system performance problems.

Inspect air vent and air separators in the system. Remove the caps on automatic air vents and briefly depress the valve stem to flush vent. Replace the cap when completed. Ensure vents do not leak, replace any leaking vents.

Check Expansion Tank

Refer to Section IV - Boiler Piping for recommended location of the expansion tank and air eliminators.

Closed -Type Tank:

- Ensure tank is partially filled with water leaving an air gap as a cushion. Refer to the manufacturer's instruction for proper fill level.
- Ensure the tank is fitted with a device that reduces gravity circulation of air-saturated tank water back into the system. This device prevents air from bubbling up through the water as it returns from the system.
- Ensure no automatic air vents are used in the system. This will allow air to escape from the system instead of returning to the tank.

Diaphragm Tank:

- Ensure the system contains a minimum of one automatic air vent. Recommended location of the air vent should be atop an air eliminator.
- Remove the tank from the system and check the charge pressure. For residential applications the charge pressure is typically 12 psig. If tank does not hold a charge pressure, then the membrane is damaged and the tank should be replaced.

Check Boiler Relief Valve

Inspect the relief valve and lift the lever to verify flow at least annually or as recommended on the warning tag of the valve.

⚠ WARNING

Before manually operating the pressure relief valve, ensure the discharge piping is directed to a suitable place of disposal to avoid a potential scald hazard. The discharge piping must be full size without restriction and installed to permit complete drainage of both the valve and line.

If after closing the valve, the valve fails to seat properly or continually weeps, replace the relief valve. Ensure the cause of the relief valve to weep is the valve itself, not due to system over-pressurization caused by an expansion tank that is waterlogged or undersized.

Inspection of Ignition Electrode

Remove the ignition electrode from the burner mounting plate.

Remove any white oxides accumulated on the electrode using fine grit sandpaper or steel wool. If the electrode does not clean to a satisfactory condition, replace the ignitor.

When replacing the ignition electrode, ensure the gasket is in good condition and correctly positioned. Replace gasket if necessary.

Check Ignition Wiring and Ground Wiring

Inspect the burner wiring from the burner control module to the ground terminal behind the control panel.

Ensure wiring is in good condition and securely connected.

Check ground continuity of the wiring to the boiler jacket or piping using a continuity meter.

Replace and correct ground wire if ground continuity is not completed and satisfactory.

Check Control Wiring

Inspect all control wiring. Ensure wiring is in good condition and properly connected.

Check Control Settings

1. Set the control display to PARAMETER mode and check all boiler settings. Adjust setting as necessary see page 44.
2. Check any external limit control settings (if used). Adjust settings as necessary.

Perform Start-Up and Checkout Procedures

Start the unit and perform the start-up procedure as listed in this manual.

Verify the cold water fill pressure is correct and the operating pressure of the boiler is within normal operating range.

Complete the checkout procedures as referenced in this manual.

Check Burner Flame

Inspect the burner flame through the observation port on the heat exchanger.

If flame pattern is not fully blue and covers the entire burner surface during high fire, shut the unit down and allow it to cool thoroughly before disassembly.

Close the external manual gas valve on the gas supply line and disconnect the gas piping and rectifier plug.

Disconnect the wiring harness connectors from the blower and remove the blower retaining screws. Remove the blower from the unit.

Remove the mounting nuts securing the burner mounting plate to the heat exchanger and set aside.

Carefully remove the burner mounting plate assembly from the heat exchanger. Ensure combustion chamber insulation is not damaged during removal of burner mounting plate assembly. See WARNING on page 61.

Remove the burner head mounting screws and remove the burner head. Inspect the burner head for deterioration. Use compressed air or a vacuum to clean the burner head.

Remove the venturi and gas valve assembly from the blower.

Use a vacuum cleaner or compressed air to clean the interior of the blower assembly. Inspect the blower blades to ensure they are clean and not damaged.

Re-assemble the venturi and gas valve onto the blower. Ensure the venturi gasket is in good condition, positioned correctly and replace gasket if necessary.

Re-assemble the burner head onto the burner mounting plate. Ensure the burner head gasket is in good condition, positioned correctly and replace gasket if necessary.

Re-assemble the burner mounting plate assembly onto the heat exchanger. Ensure the burner plate gasket and combustion chamber insulation is in place and not damaged, replace gasket and insulation if necessary. See WARNING on page 61.

Re-assemble the blower onto the burner mounting plate and reconnect the wiring harness connectors.

Re-assemble the gas supply connection and rectifier to gas valve. Open the external manual gas valve. Check gas piping for any leaks as outlined on page 38 and repair if necessary. Place the unit back into service.

Check Flame Signal

The flame signal should be a min. 3µ A –DC.

Check the ignitor for fouling or damaged insulation if a low flame signal is read.

Check ground wiring and continuity as a cause for low flame signal. Replace ignitor if conditions are satisfactory.

Check Combustion Levels

Refer to page 38 of this manual for measuring combustion levels and burner adjustments.

Check Flue Gas Temperature

1. Adjust the boiler to fire at HIGH fire, see page 42. Place the control display to INFORMATION mode, see page 44 for procedures.
2. The flue gas temperature is indicated on the display when the first digit is 5. The measured temperature (shown as the last 3 digits) should not be more than 54ºF higher than the measured supply water temperature.
3. The measured supply water temperature is indicated on the information display when the first digit is 1 and the temperature shown as the last 3 digits.
4. If the measured flue gas temperature is higher than 54ºF over the supply water temperature, shut the boiler down and follow the procedures listed below to clean the heat exchanger.

Clean Heat Exchanger

1. Shut down the boiler:
   - Follow the instructions on page 39 "To Turn Off Gas to Appliance"
   - Do not drain the boiler unless the boiler will be subject to freezing conditions.
   - Do not drain the boiler if freeze protection fluid is used in the system.
2. Allow the boiler to cool down to room temperature before servicing.
3. Disconnect the gas piping and rectifier plug to the gas valve.
4. Disconnect the wiring harness connectors from the blower and remove the blower retaining screws. Remove the blower from the unit.
5. Remove the mounting nuts securing the burner mounting plate to the heat exchanger and set aside.
6. Carefully remove the burner mounting plate assembly from the heat exchanger. Ensure combustion chamber insulation is not damaged during removal of burner mounting plate assembly. See WARNING on page 61.
7. Carefully remove the combustion chamber insulation from the heat exchanger and set aside. See WARNING on page 61.
8. Use a vacuum cleaner, compressed air or water to remove any accumulation from the heat exchanger flue ways. Do not use any solvent.
9. Re-install the combustion chamber insulation onto the heat exchanger.
10. Re-assemble the burner mounting plate assembly onto the heat exchanger. Ensure the burner plate gasket and combustion chamber insulation is in place and not damaged, replace gasket and insulation if necessary. See WARNING on page 61.
11. Re-assemble the blower onto the burner mounting plate and reconnect the wiring harness connectors.
12. Reconnect the gas piping and rectifier to gas valve. Check for gas leaks, repair if necessary.
13. Close isolation valves on the boiler water piping to isolate the boiler from the heating system.

14. Attach a hose to the boiler drain valve and flush the boiler thoroughly with fresh water by using the purge valves to allow water to enter through the make-up water line to the boiler.
15. Once the boiler has been completely flushed, return the boiler and system piping back to operation.
16. Perform the required startup and checkout procedures as outlined on pages 34 to 46.

Review With Owner

Ensure the owner understands the importance to perform the maintenance schedule specified in this manual.

Remind the owner of the importance to call a licensed contractor should the unit or system exhibit any unusual behavior.

Handling of Previously Fired Combustion Chamber Insulation

⚠ WARNING

The combustion chamber insulation contains ceramic fibers, which are classified as a possible human carcinogen. When exposed to extremely high temperatures, the ceramic fibers, which contain crystalline silica, can be converted into cristobalite.

Avoid Breathing and Contact with Skin and Eyes

When removing or repairing the combustion chamber insulation follow these precaution measures:

1. Use a NIOSH approved respirator which meets OSHA requirements for cristobalite dust, similar to N95. Contact NIOSH at 1-800-356-4676 or on the web at www.cdc.gov/niosh for latest recommendations.
2. Wear long sleeved, loose fitting clothing, gloves and eyes protection.
3. Assure adequate ventilation.
4. Wash with soap and water after contact.
5. Wash potentially contaminated clothes separately from other laundry and rinse washing machine thoroughly.
6. Discard used insulation in an air tight plastic bag.

NIOSH Stated First Aid:
Eye/Skin: Immediately irrigate
Breathing: Clean fresh air

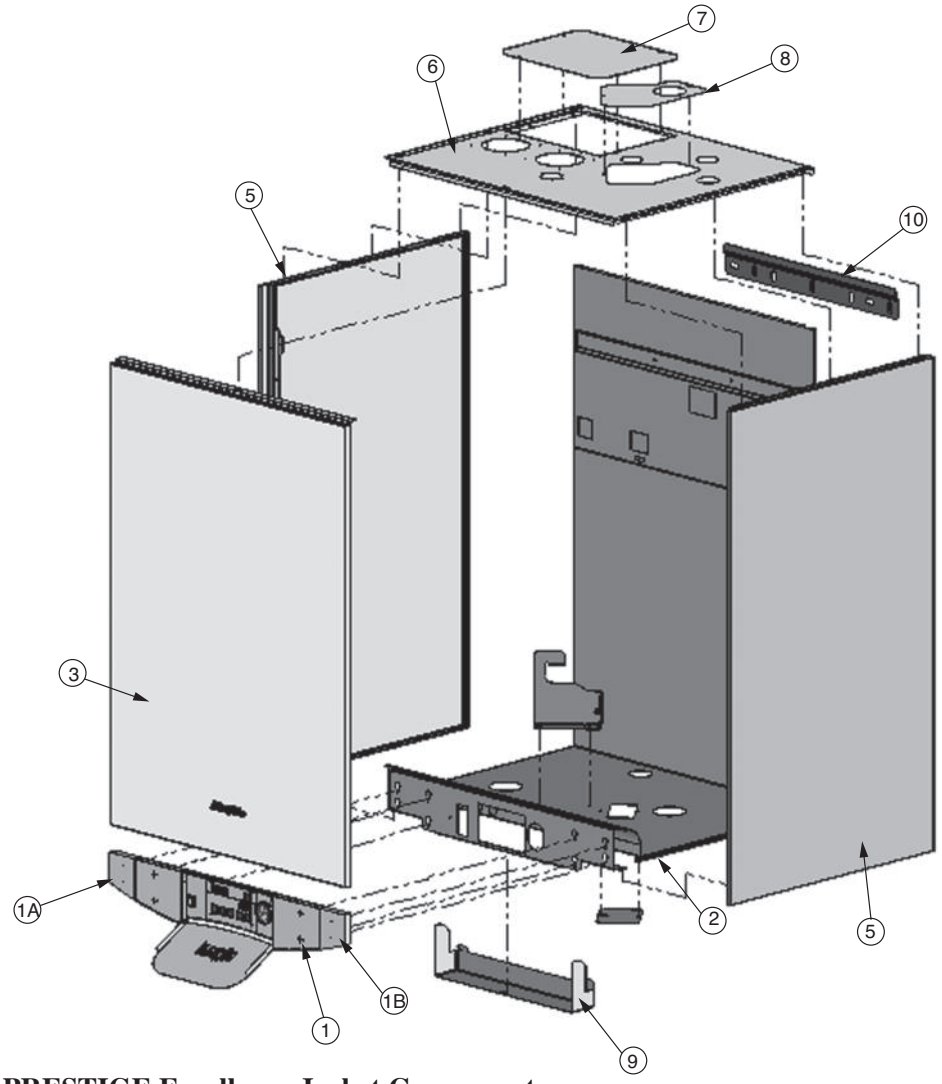


Fig. 26: PRESTIGE Excellence Jacket Components

Item	Part No.	Description
1	PSCS01	Display/Control Panel
1A / 1B	PSCS02 / PSCS03	Display/Control Panel Extension
2	PSJKT04B	Base Panel
3	PSJKT02F	Front Jacket Panel
5	PSJKT03S	Side Jacket Panel (Left and Right)
6	PEJKT01	Top Jacket Panel
7	PEJKT02	Top Jacket Panel - Blower Access
8	PEJKT03	Top Jacket Panel - IDWH Access
9	PSJKT04	Control Cover Panel
10	PSRKIT21	Wall Mounting Bracket with Hardware

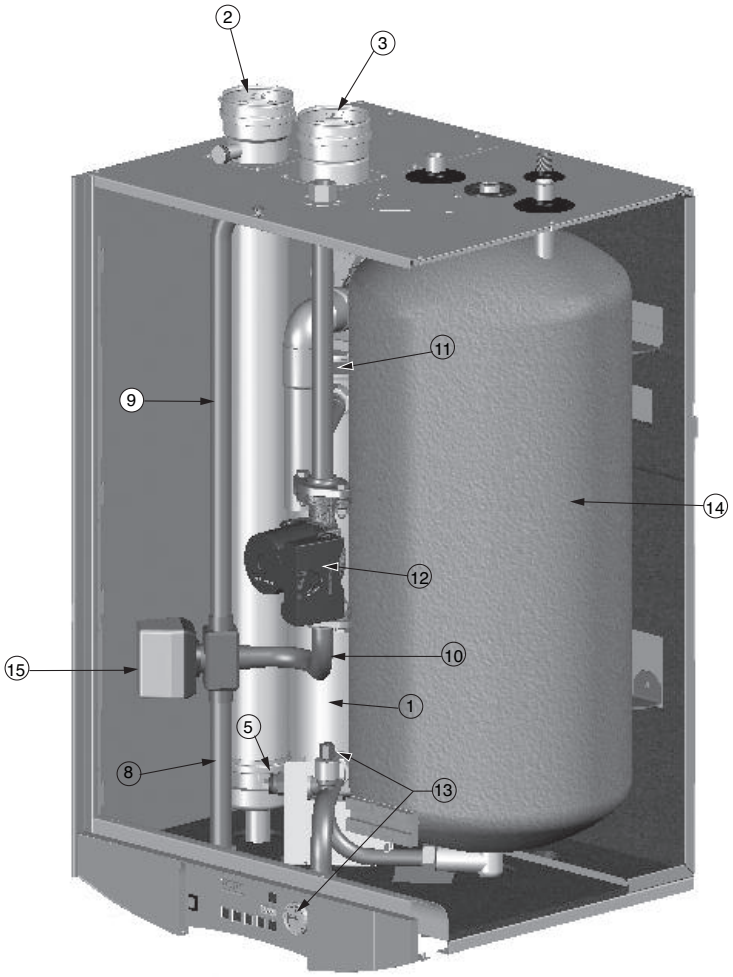


Fig. 27: PRESTIGE Excellence Internal Components

Item	Part No.	Description
1	PSRKIT01	Heat Exchanger Body
2	PSRKIT02	Vent Outlet Adapter
3	PSRKIT03	Combustion Air Inlet Adapter
4	PSRKIT04	NTC Sensor (NTC1, NTC2 and NTC5) (Not shown)
5	PGRKIT20	LWCO Pressure Device
6	PSRKIT05	Condensate Drain Assembly (Not shown)
7	PSRKIT59	Boiler Piping - Return Assembly
8	PSRKIT60	Boiler Piping - Supply Outlet Assembly
9	PSRKIT61	Boiler Piping - Supply Long Assembly
10	PSRKIT54	Boiler Piping - Supply Short Assembly
11	PSRKIT62	Boiler Piping - Relief Valve Assembly
12	HMCIR01	Circulator
13	PSRKIT17	Pressure Gauge and Fitting
14	PSRKIT56	Excellence Water Heater Tank
15	PSRKIT57	Valve Actuator

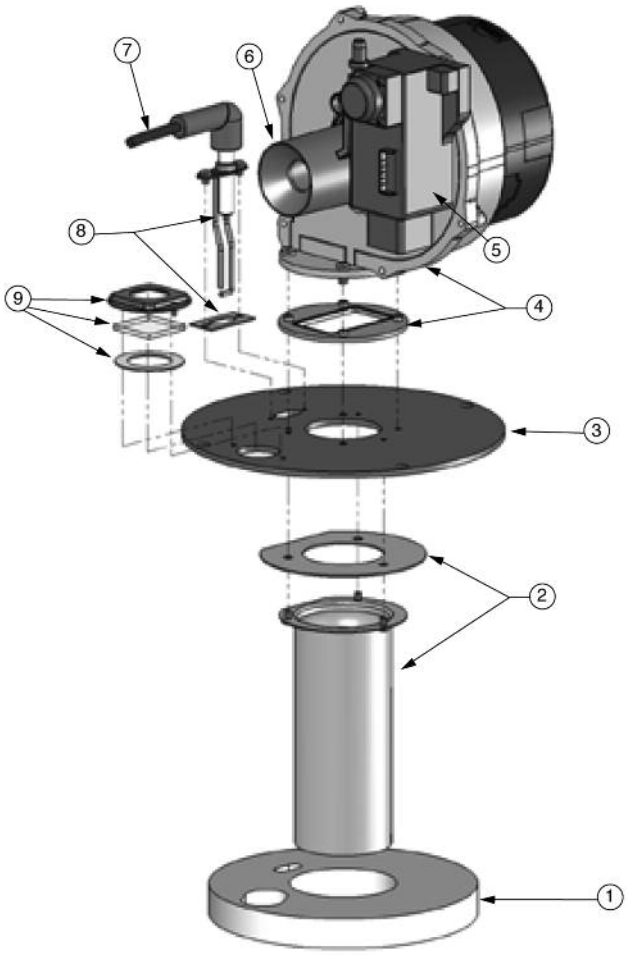


Fig. 28: PRESTIGE Excellence Burner Components

Item	Part No.	Description
1	PSRKIT09	Combustion Chamber Insulation
2	PSRKIT10	Burner Head with Gasket - Natural
	PSRKIT11	Burner Head with Gasket - Propane
3	PSRKIT12	Burner Plate
4	PSRKIT55	Blower with Gasket
5	PGRKIT01	Gas Valve
6	--	Venturi -002
7	PSRKIT14	Ignition Cable
8	PSRKIT15	Igniter with Gasket
9	PSRKIT16	Sight Glass Assembly (Glass, Gasket and Bracket)
10	--	Propane Orifice 0.204" (#52) - Not Shown
11	--	Burner Plate Gasket - Not Shown
12	PGRKIT15	Gas Valve Rectifier Plug - Not Shown

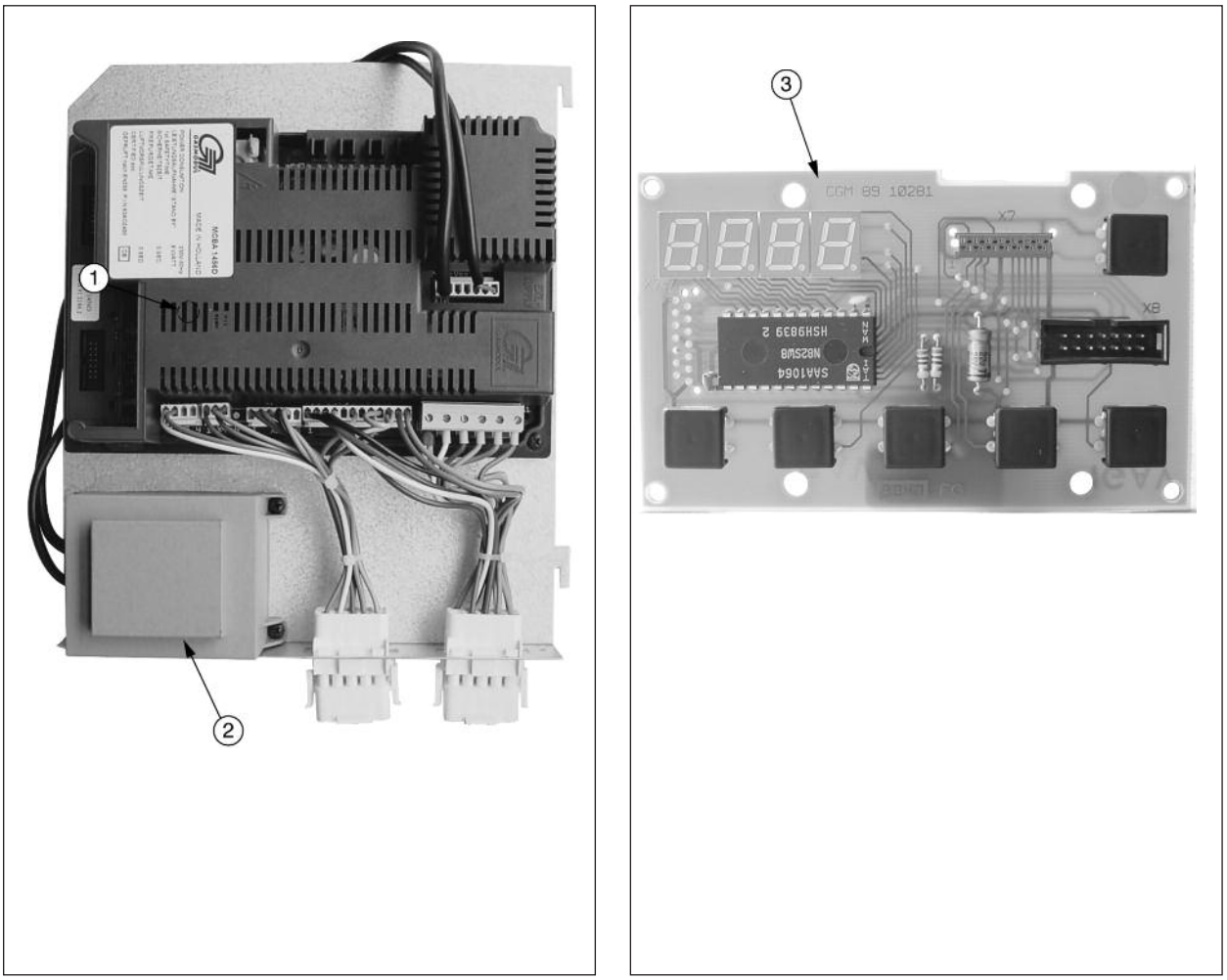
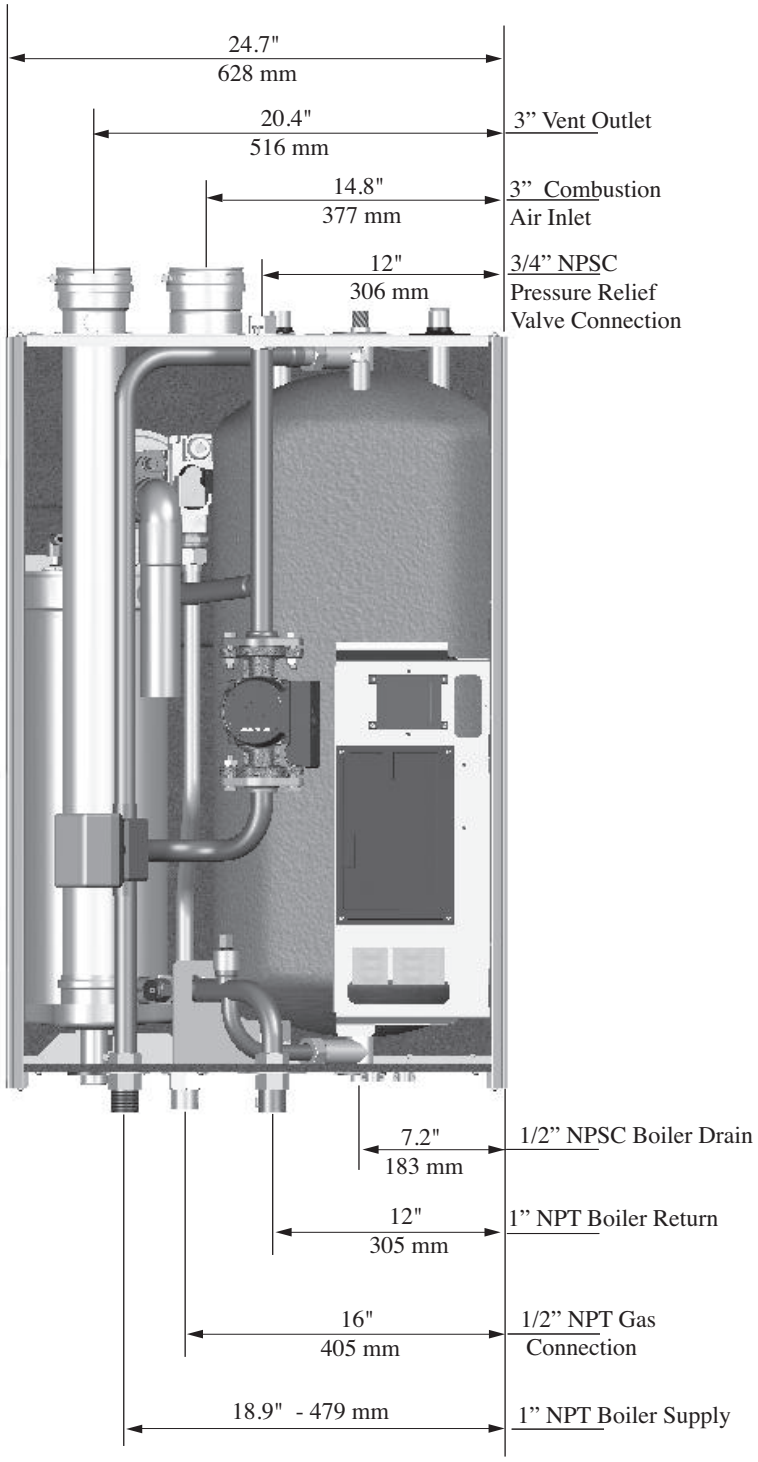
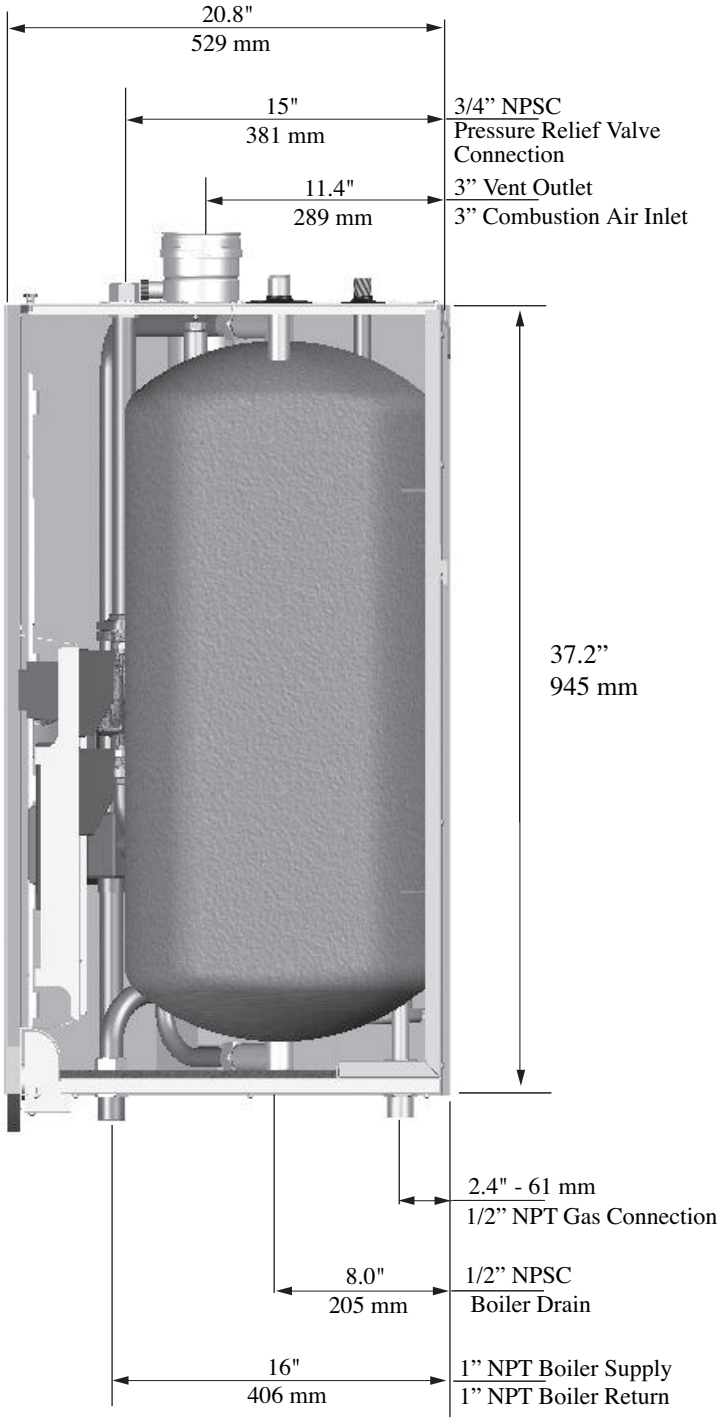


Fig. 29: PRESTIGE Excellence Electronic Components

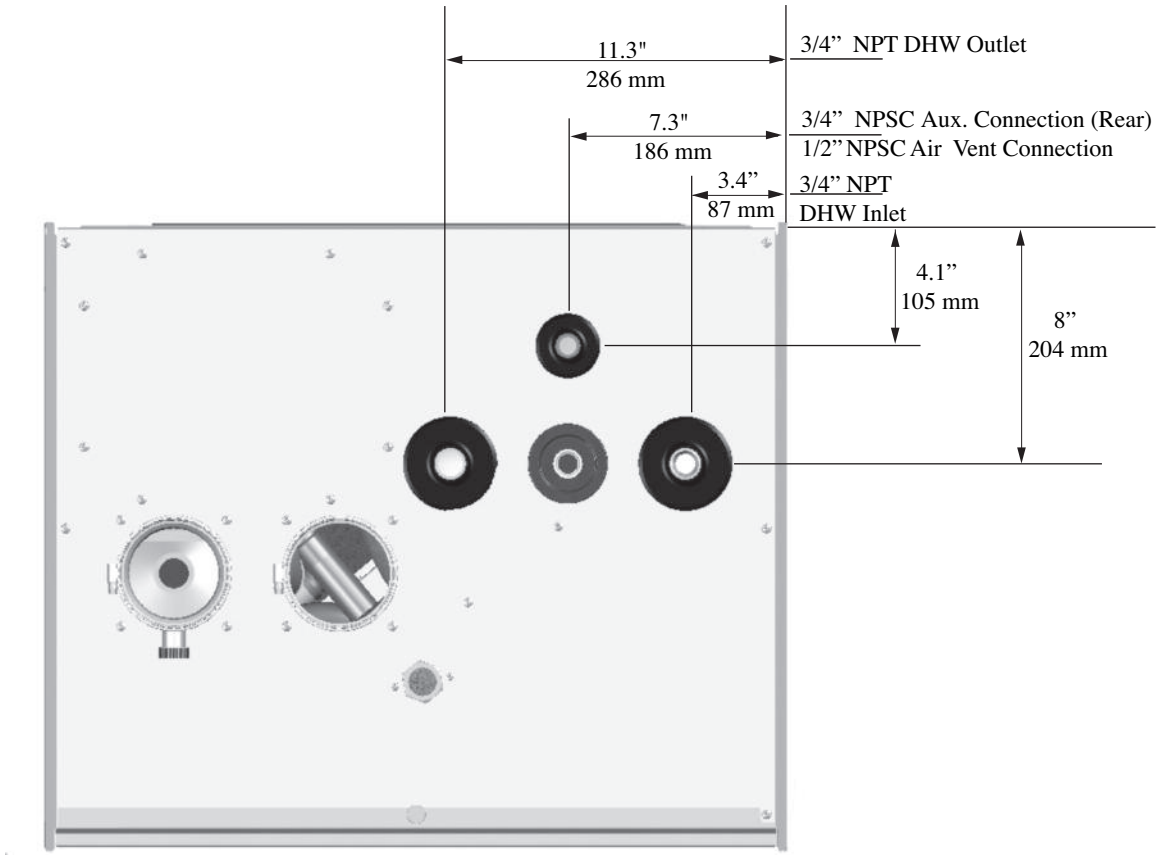
Item	Part No.	Description
1	PSRKIT58	PRESTIGE Control Module
2	PSRKIT19	Transformer with Surge Protection
3	PSRKIT20	PRESTIGE Control Module Display


24.7"
628 mm
20.4"
516 mm
3” Vent Outlet
14.8"
377 mm
3” Combustion
Air Inlet
12"
306 mm
3/4” NPSC
Pressure Relief
Valve Connection
7.2"
183 mm
1/2” NPSC Boiler Drain
12"
305 mm
1” NPT Boiler Return
16"
405 mm
1/2” NPT Gas
Connection
18.9" - 479 mm
1” NPT Boiler Supply

Front View


20.8"
529 mm
15"
381 mm
3/4” NPSC
Pressure Relief Valve
Connection
11.4"
289 mm
3” Vent Outlet
3” Combustion Air Inlet
37.2”
945 mm
2.4" - 61 mm
1/2” NPT Gas Connection
8.0"
205 mm
1/2” NPSC
Boiler Drain
16"
406 mm
1” NPT Boiler Supply
1” NPT Boiler Return

Side View



Top View (Domestic Connections)

Boiler Model	Fuel	DOE Heating Capacity Note 1 & 4	Input Note 4	Net IBR Rating Note 2	DOE Seasonal Efficiency AFUE Note 3	Shipping Weight Lbs / Kg
Excellence	Natural	99,000	110,000	86,000	95%	190 / 86
Excellence	Propane	87,000	97,000	76,000	95%	190 / 86

Note 1: The heating capacity of the PRESTIGE Excellence is based on the test requirements of the U.S. Department of Energy.

Note 2: The IBR rating is based on a piping and pick up allowance of 1.15. This allowance should be sufficient for the standard radiation requirements for a building load.

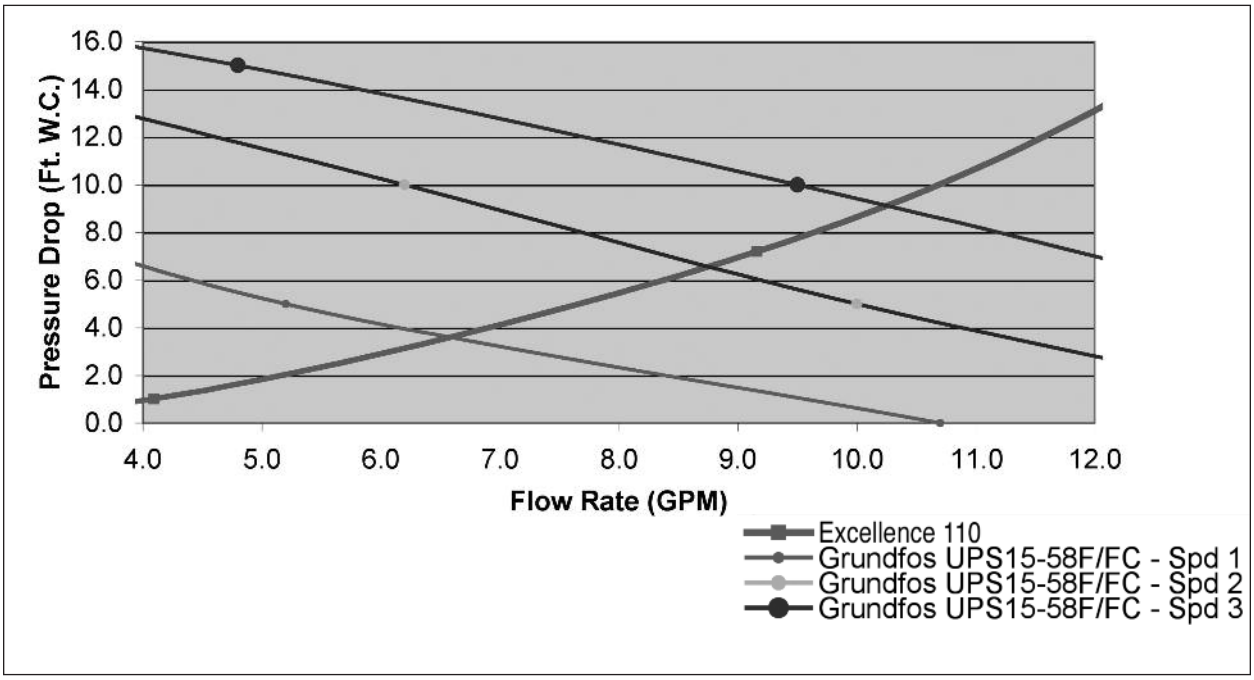
Note 3: Based on the given AFUE the PRESTIGE Excellence meets the energy efficiency guidelines established by Energy Star.

Note 4: Input and output ratings are shown for sea level applications. The PRESTIGE Excellence automatically derates the input at approximately 2% for every 1,000 Ft. of altitude. No alterations to the boiler or burner system is required.

DOE

Graph 2: Pressure Drop Comparison Excellence 110 vs Grundfos UPS 15-58F-FC

Delta T	GPM	Available System Head in Feet		
		Spd1	Spd 2	Spd 3
20	10.0	---	---	4.5
30	6.5	1.7	7.7	11.2
40	5.0	4.7	10.9	14.2



Note: Minimum allowable flow rate at full input: 5.0 gpm

Additional Quality Water Heating Equipment Available from Triangle Tube

Maxi-Flo and Spa Heat Exchangers

- Construction of high quality corrosion resistant stainless steel (AISI 316) or titanium
- Specially designed built-in flow restrictor to assure maximum heat exchange
- Compact and light weight
- Available in 5 sizes that can accommodate any size pool or spa

Smart Indirect Fired Water Heaters

- Exclusive Tank-in-Tank design
- Stainless steel construction
- Available in 8 sizes and 2 models
- Limited LIFETIME residential warranty
- 15 year limited commercial warranty
- Self cleaning/self descaling design

TTP Brazed Plate Heat Exchangers

- For domestic water, snow melting, radiant floor, refrigeration
- Plates made of stainless steel, with a 99.9 % copper and brazed, ensuring a high resistance to corrosion
- Self cleaning and self descaling
- Computerized sizing available from Triangle Tube/Phase III
- Available in capacities from 25,000 BTU/hr to 5,000,000 BTU/hr

CERTIFIED ISO 9001 2000 STANDARD

TriangleTube

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TriangleTube

prestige

Excellence

Indirect Water Heater

Part 2 of 2

INSTALLATION AND MAINTENANCE
MANUAL

⚠ WARNING

- **Before proceeding with installation and operation, read entire manual carefully. Failure to do so can cause injury or property damage.**

IMPORTANT

- **When receiving the PRESTIGE Excellence, any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.**
- **Warranty Registration Card must be filled out by the customer and mailed within thirty (30) days of installation in order to gain warranty coverage.**
- **Retain and affix this manual near the water heater for future reference**
- **Installation and service should only be performed by a qualified installer or service technician.**
- **Installations and service should be performed by a license plumber or gas fitter in the Commonwealth of Massachusetts.**

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- Thermal Expansion 6
- Water Hammer 6
- Vacuum Breaker 6
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Definitions

The following terms are used throughout this manual to bring attention to the presence of potential hazards or important information concerning the product.

⚠ DANGER

Indicates the presence of a hazardous situation which, if ignored, will result in death, serious injury or substantial property damage.

⚠ WARNING

Indicates a potentially hazardous situation which, if ignored, can result in death, serious injury or substantial property damage.

⚠ CAUTION

Indicates a potentially hazardous situation which, if ignored, may result in minor injury or property damage.

NOTICE

Indicates special instructions on installation, operation or maintenance, which are important to equipment but not related to personal injury hazards.

BEST PRACTICE

Indicates recommendations made by Triangle Tube for the installers which will help to ensure optimum operation and longevity of the equipment

NOTICE

Triangle Tube reserves the right to modify the technical specifications and components of its products without prior notice.

⚠ WARNING

Bacteria can develop in the domestic water system if certain minimum water temperatures are not maintained.

⚠ DANGER

HOT WATER CAN SCALD!

Water temperature over 125ºF can cause severe burns instantly or death from scalds.

- Children, disabled and elderly are at highest risk of being scalded.
  - **Never leave them unattended in or near shower, bathtub or sink.**
  - **Never allow small children to use a hot water faucet or draw their own bath.**
- To avoid any potential scald hazard or if codes require specific water temperatures at the hot water faucet, the installer must:
  - Install the factory supplied thermostatic mixing valve at this appliance and ensure it is working property

    and
  - Set the domestic storage temperature to the lowest temperature which satisfies your hot water needs.
  - Feel and adjust water temperature before bathing or showering.
  - Water drained from the system drain valves may be extremely hot.

  TO AVOID INJURY:
  - Make sure all connections are tight.
  - Direct water flow away from any person.

⚠ CAUTION

Protection must be taken against excessive temperature and pressure!

TO PROTECT AGAINST EXCESSIVE TEMPERATURE AND PRESSURE

- Check if the Temperature & Pressure (T&P) relief valve is installed in the location provided (DHW Side).
- Check if the 30 psi relief valve supplied is installed in the location provided (CH Side)
- To avoid injury, install the relief devices to comply with local code requirements.

⚠ CAUTION

To prevent damage to the inner tank, the Installer must:

- **Always fill inner tank prior to outer tank and always drain outer tank prior to inner tank.**
- **Relieve primary system pressure below 15 psig prior to draining inner tank.**

Codes Compliance

Installation of the Excellence Water Heater must conform with the instructions in this manual and where applicable:

- local, state, provincial, and national codes, laws, regulations and ordinances.
- in Canada - CAN / CGA B149.1 or B149.2 Installation Code.

Excellence water heater is exempt from ASME Section VIII, Division 1 Code construction per Interpretation VIII-86-136. Check with local codes for applicability.

NOTICE

The Excellence water heater will absorb less than 200,000 BTU/hr when domestic water outlet temperature is 194ºF and boiler water supply temperature is 240ºF. Listed outputs are based on ASME Section VIII Interpretation VIII-1-86-136.

Where recommendations in this manual differ from local, or national codes, the local or national codes take precedence.

Codes Restrictions

Single wall heat exchanger in the Excellence water heater complies with National Standard Plumbing Code, provided that:

– boiler water (including additives) is practically non-toxic, having toxicity rating or class of 1, as listed in Clinical Toxicology of Commercial Products, and

– boiler water pressure is limited to maximum 30 psig by approved relief valve.

Single wall heat exchangers are permitted under the Uniform Plumbing Code - Paragraph L3.2. and L3.3 if they satisfy all of the following requirements.

1. The heat transfer medium is potable water or contains only substances which are recognized as safe by the U.S. Food and Drug Administration.
2. The pressure of the heat transfer medium is maintained less than the normal minimum operating pressure of the potable water system

   Exception: Steam complying with section #1 above.
3. The equipment is permanently labeled to indicate that only additives recognized as safe by the FDA shall be used in the heat transfer medium.

Other heat exchanger designs may be permitted where approved by the Administrative Authority.

Operating Restrictions

- Maximum DHW outlet temperature is 120ºF, when factory supplied mixing valve is installed.
- Maximum boiler water temperature is 194ºF.
- Maximum working pressure for inner (domestic water) tank is 150 psig.
- Maximum working pressure for outer (boiler water) tank is 30 psig.
- pH and chloride limits for water heaters are:

  - chloride, less than 150 mg/l
  - pH value min. 6 - max. 8

NOTICE

Any water conditioning system must be installed and maintained in accordance with manufacturer's specifications.

NOTICE

Do not install the Excellence water heater on any application if the boiler piping contains non-oxygen barrier tubing or if the boiler piping is considered an "open system". Exposing the outer tank of the Excellence water heater to oxygen contamination will lead to premature tank failure and denial of the warranty.

Locating Water Heater

- The Excellence is not intended for outdoor installations.
- Locate Excellence so that any leakage from the tank or water connections will not cause damage to the area adjoining the water heater or to lower floors in the structure.

Recommended Clearances

The Excellence is approved for zero clearance to combustibles, excluding vent and boiler piping.

- Vent & Boiler Piping - 1/4 inch from combustible materials.

BEST PRACTICE

To provide serviceability to the unit it is recommended that the following clearances be maintained:

Top boiler jacket - 24 inches.

Front - 24 inches.

Bottom boiler piping - 24 inches.

Rear - 0 inches

Sides - 6 inches

NOTICE

When maintaining zero clearance or less than recommended clearances, some product labeling may become hidden and unreadable

⚠ WARNING

When installing the Excellence in a confined space, sufficient air must be provided for proper combustion and venting and to allow, under normal operating conditions, proper air flow around the product to maintain ambient temperatures within safe limits to comply with the National Fuel Gas Code NFPA 54 - latest edition. Reference the Excellence Boiler Manual for additional guidelines.

Residential Garage Installations

When installing the Excellence in a residential garage, the following special precautions per NFPA 54/ANSI Z223.1 must be taken:

- Mount the unit with a minimum 18 inches above the floor level of the garage. Ensure the burner and ignition devices / controls are no less than 18 inches above the floor level.
- Locate or protect the unit in a matter so it cannot be damaged by a moving vehicle.

Temperature & Pressure (T&P) Relief Valve

⚠ CAUTION

To reduce risk of excessive pressures and temperatures in the water heater, install temperature and pressure protective equipment required by local codes, but no less than a combination temperature and pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials, as meeting the requirements for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems, ANSI Z21.22. This valve must be marked with a maximum working pressure of the water heater.

- The Excellence water heater must be protected with a T&P relief valve.
- Size the Excellence T&P relief valve by the following specifications, unless they conflict with local codes: 3/4" NPT with an AGA Rating of 100,000 BTU/hr (Watts 100XL-8 or equivalent).

NOTICE

For proper operation of the T&P and to prevent the T&P from activating due to boiler water temperature, use a T&P relief valve with extended element. A 8" minimum length is recommended.

Standard Installation

- Install T&P relief valve in the **Auxiliary** connection located behind the air vent on the top of the water heater as shown Fig. 2 page 8.

Commonwealth of Massachusetts Installation

Follow this procedure for jurisdictions requiring a vacuum breaker to be installed on the domestic cold water inlet.

- Install the T&P in the run (straight through leg) of a tee located at the domestic hot water outlet. Use a long element T&P relief valve, as shown in Fig. 3 page 8.

T&P Relief Valve Discharge Piping

T&P relief valve discharge piping must be:

- made of material serviceable for temperatures of 250ºF or greater.
- directed so that hot water flows away from all persons.
- directed to a suitable place for disposal.
- installed so as to allow complete draining of the T&P relief valve and discharge line.

T&P relief valve discharge piping **must not** be:

- excessively long. Using more than 2 elbows or 15 feet of piping can reduce discharge capacity.
- directly connected to a drain. Terminate discharge piping within 6" from drain. Refer to local codes.
- plugged, reduced or restricted.
- subject to freezing.

⚠ WARNING

Do not install any valve between T&P relief valve and tank connection or on T&P relief valve discharge piping. Do not plug T&P relief valve or discharge piping. Improper placement and piping of T&P relief valve can cause severe personal injury, death or substantial property damage.

Drain Valve

Drain valve and fittings are supplied by others.

Standard Installation

- Install a tee connection at the domestic cold water inlet, as shown in Fig. 4, pages 9.
- Pipe the drain piping with drain valve from the tee connection to:
  - a suitable place for disposal

  or
  - terminate within 12" of the floor

Commonwealth of Massachusetts Installation

- Thread a 3/4" close nipple onto the Auxiliary connection and insert an open-end dip tube into the Auxiliary connection on top of water heater. As shown in Fig. 3, page 8.
- Install a 3/4" NPT elbow to the Auxiliary connection.
- Pipe the drain piping with drain valve from the elbow connection to:
  - a suitable place for disposal

  or
  - terminate within 12" of the floor

Automatic Air Vent

1. Install automatic air vent provided using suitable pipe dope or tape in the air vent connection as shown in Fig. 2 and 3 page 8.
2. Unscrew vent cap on air vent one full turn. Leave cap unscrewed one turn for normal venting.

Thermal Expansion

If a backflow preventer, check valve or pressure reducing valve is piped on cold water supply piping of water heater, install an expansion tank on cold water supply line to prevent normal thermal expansion from repeatedly forcing open T&P relief valve.

⚠ CAUTION

T&P relief valve is not intended for constant duty, such as relief of pressure due to repeated normal system expansion. Correct this condition by installing a properly sized expansion tank in domestic water system. Refer to expansion tank manufacturer's installation instructions for proper sizing.

Water Hammer

Dishwashers, clothes washers and fast-closing positive shut-off valves incorporated in the system all contribute to creating water shock. Install a water hammer arrester to prevent damage to pipes and appliances. See device manufacturer's instructions for application and installation.

NOTICE

Water hammering within the domestic piping system can cause premature failure of the inner tank of the water heater. This type of failure is *NOT* covered under warranty.

Vacuum Breaker

Installing a vacuum breaker on the domestic cold water outlet will prevent damage to the inner tank if a negative pressure is developed in the domestic supply line. See manufacturer's instructions for application and installation of the vacuum breaker.

General Piping

- For domestic water piping diagrams, see pages 9 and 10.
- All plumbing must meet or exceed all local, state and national plumbing codes.
- Use pipe dope or tape suitable for potable water systems.
- Use isolation valves to isolate system components.

Domestic Piping

- Union on domestic hot water outlet should be piped at a higher elevation than domestic water drain valve. This will make draining the water heater easier.
- Use dielectric unions or couplings to protect hot and cold water fittings from corrosion when connecting dissimilar materials such as copper and galvanized iron pipe.
- If copper pipe is used for domestic water connections, first solder pipe to a threaded adapter and then screw adapter into cold water inlet on top of Excellence. Cold Water Inlet contains an internal plastic dip tube which can be damaged by heat from soldering.

NOTICE

Do not apply heat to the cold water inlet when making sweat connections to water heater. Sweat tubing to adapter before fitting adapter to cold water inlet of heater. It is imperative that no heat be applied to the cold water inlet, as it contains a non metallic dip tube.

- When the water supply pressure is higher than 70 psig, it is recommended to install a pressure reducing valve on cold water supply line to prevent water loss through T&P relief valve.

Thermostatic Mixing Valve

The Excellence is factory supplied with a thermostatic mixing valve with built-in check valve. The mixing valve must be installed as shown in Fig. 1.

The operating range of the thermostatic mixing is 90ºF to 120ºF.

For applications with a domestic recirculation loop, the recirculation pump should be controlled by an aquastat. The maximum recommended setting of the aquastat is 10ºF lower than the thermostatic mixing valve setting.

⚠ DANGER

For proper operation of the thermostatic mixing valve and to prevent potential scalding hazards, the recirculation loop should be controlled by an aquastat. DO NOT use continuous recirculation.

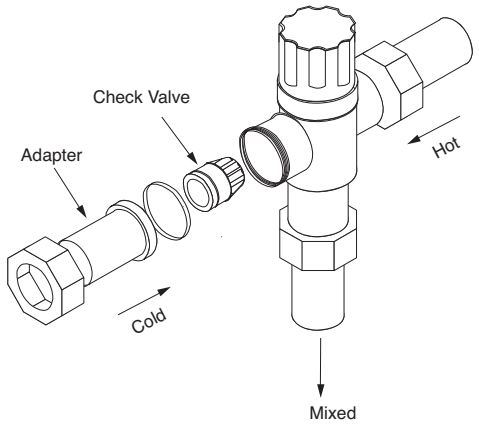


Fig. 1: Mixing Valve Assembly

Recirculation Piping

- Recirculation piping must be installed in the cold water inlet as shown Fig. 5, page 9.
- A stainless steel or bronze circulator is recommended.

Storage Tank Application

For applications requiring large volumes of domestic hot water in a relative short period, the installer may include a storage type tank (see Fig. 6 page 10) in the domestic piping.

The installer must:

1. Relocate the thermostatic mixing valve from the Excellence to the outlet of the storage tank.
2. Provide recirculation from the storage tank back to the Excellence using a bronze type circulator. Maximum recommended recirculation flow rate is 1 gpm.

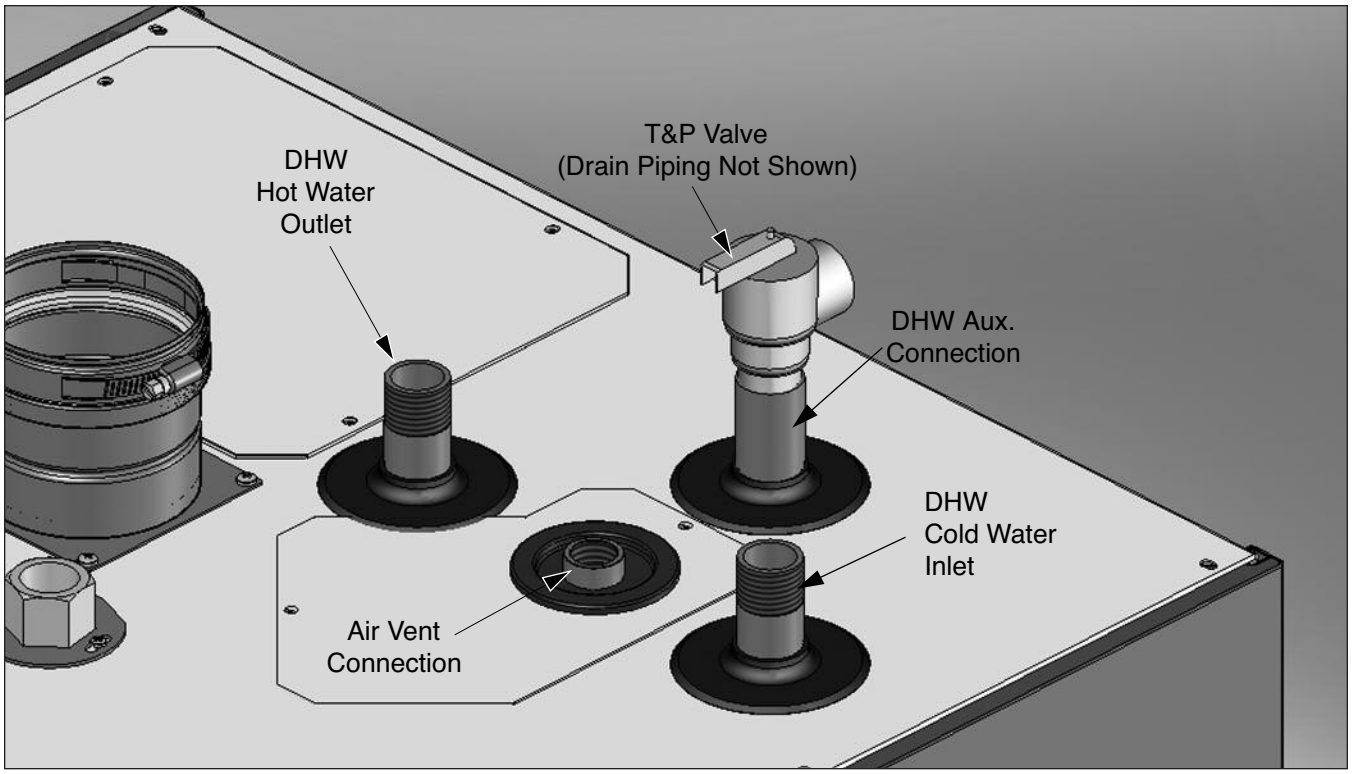


Fig. 2: Standard Installation of the T&P Relief Valve

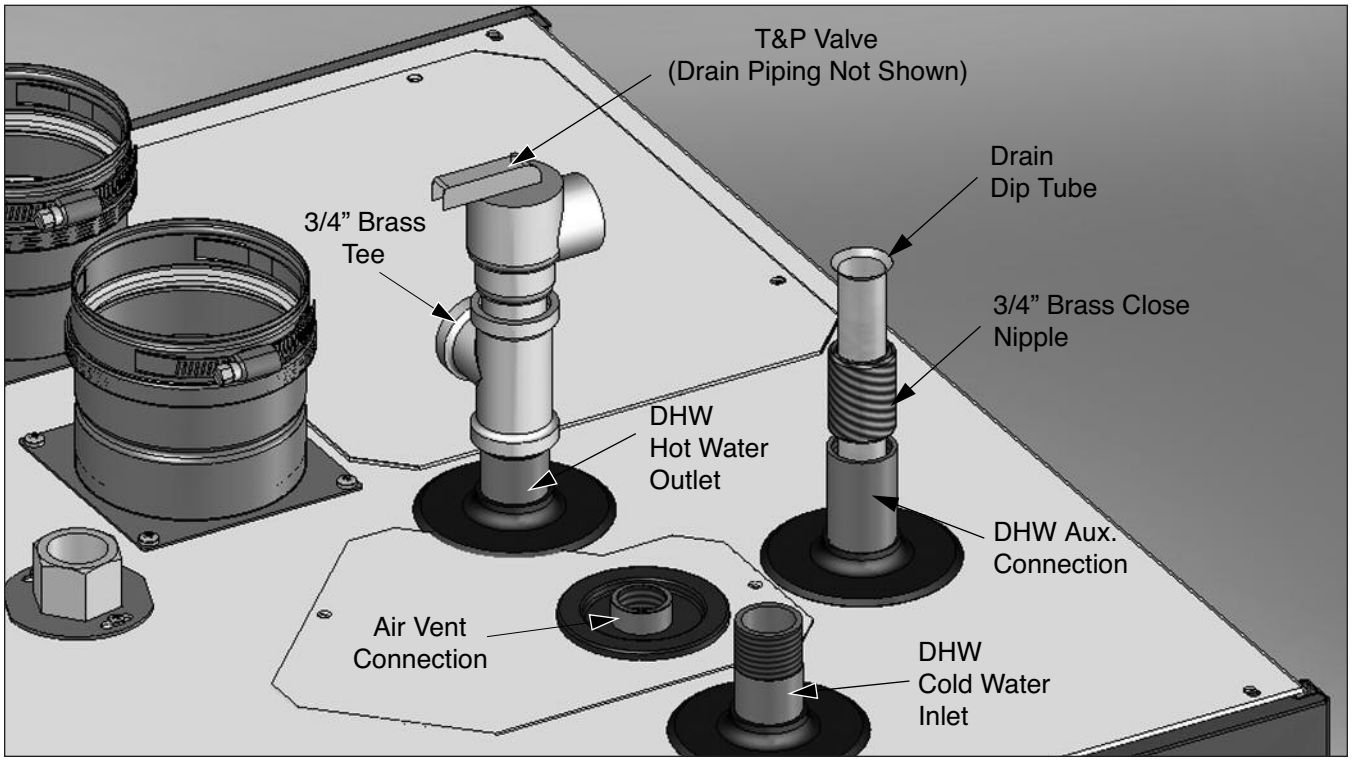


Fig. 3: Commonwealth of Massachusetts Installation

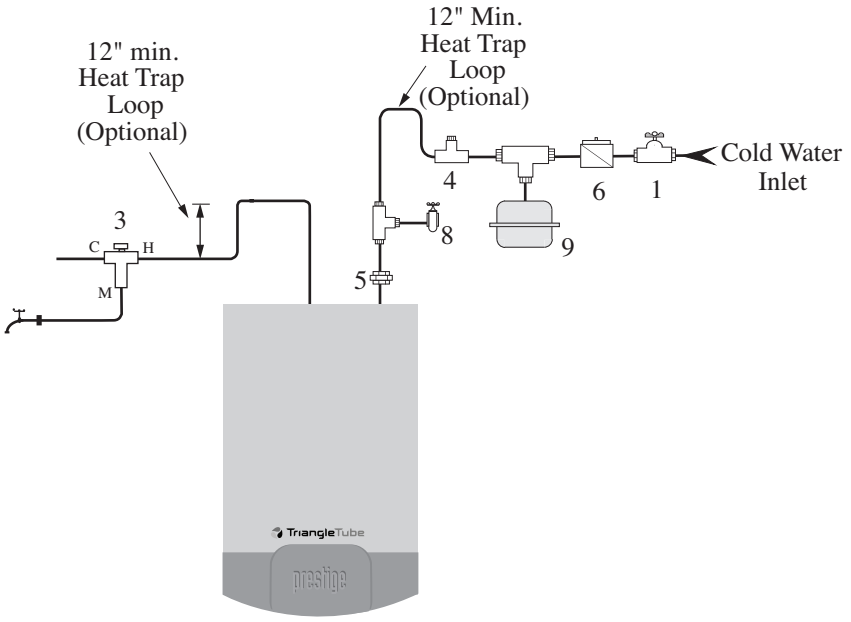


Fig. 4: Standard Installation Domestic Piping Excellence Series

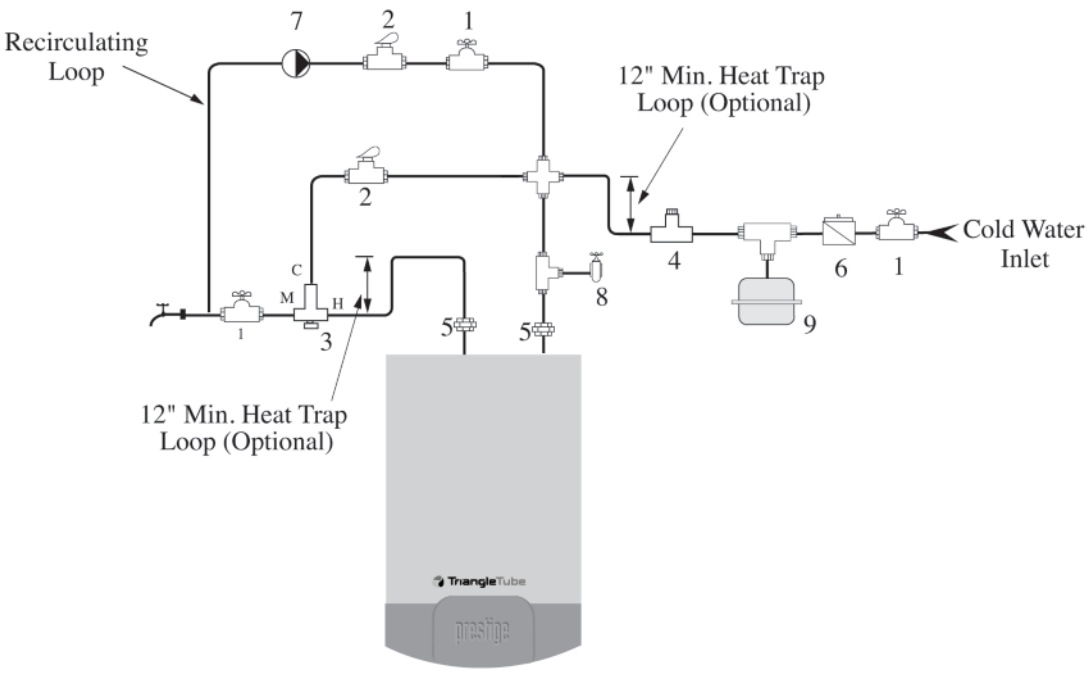


Fig. 5: Standard Installation Domestic Piping with Optional Recirculation Excellence Series

1. Shut-off valve
2. Flow check valve
3. Mixing valve with check valve
4. Vacuum Breaker *
5. Unions
6. Backflow preventer or pressure reducing valve(*)
7. Circulator (controlled by aquastat)
8 Domestic drain valve
9. Thermal expansion tank (potable)

(*) Optional devices may be required by local codes.

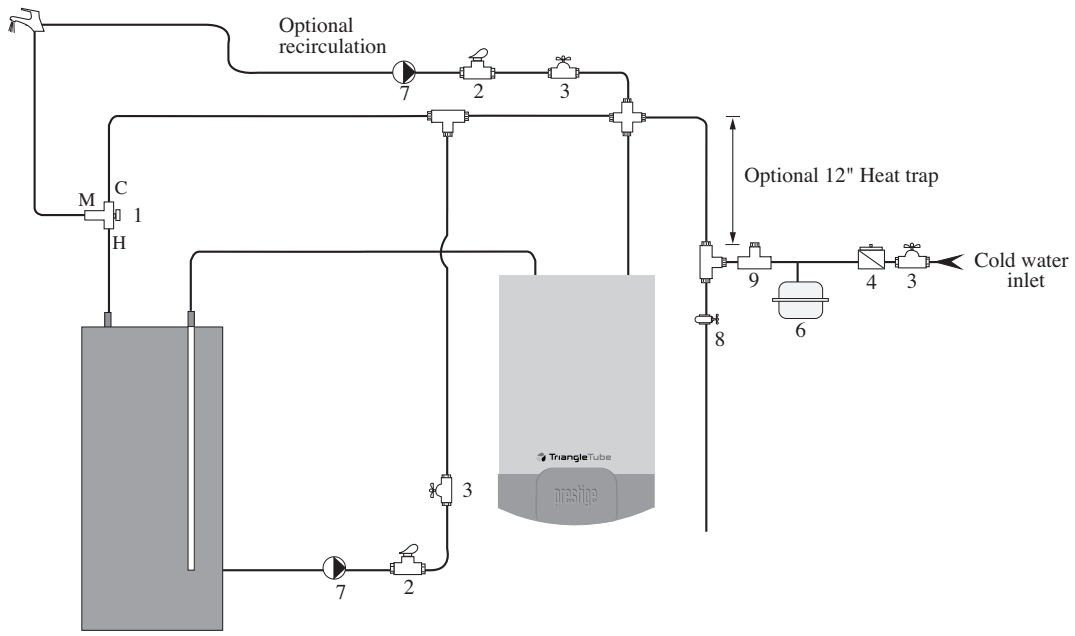


Fig. 6: Domestic Piping with Optional Storage Tank

1. Mixing valve with check valve
2. Flow check valve
3. Shut-off valve
4. Backflow preventer or pressure reducing valve(*)
6. Thermal expansion tank
7. Circulator (controlled by aquastat)
8 Domestic drain valve
9. Vacuum Breaker *

(*) Optional devices may be required by local codes.

Filling the Inner (Domestic Water) Tank

⚠ CAUTION

- **Never use the Excellence unless inner and outer tank of the water heater is completely filled with water.**
- **Inner tank of the Excellence water heater must be completely filled and pressurized before pressurizing outer tank.**

1. Close domestic water drain valve.
2. Open domestic water isolation valves on the water heater piping.
3. Vent air from inner (domestic water) tank by opening nearest hot water faucet. Fill domestic water tank completely by allowing water to run until there is a constant flow of water.
4. Close hot water faucet.

Filling the Outer (Boiler Water) Tank

⚠ CAUTION

- **Never use the Excellence unless inner and outer tank of the water heater is completely filled with water.**
- **Inner tank of the Excellence water heater must be completely filled and pressurized before pressurizing outer tank.**

NOTICE

Reference the PRESTIGE Excellence boiler manual for boiler start-up and guidelines for filling the boiler.

If antifreeze is used in boiler water, check concentration. Boiler water (including additives) must be practically non-toxic, having toxicity rating or class of 1, as listed in Clinical Toxicology of Commercial Products.

⚠ WARNING

Do not use automotive, ethylene glycol or petroleum-based antifreeze. Do not use any undiluted antifreeze. This can cause severe personal injury, death or substantial property damage.

Setting the Thermostatic Mixing Valve

NOTICE

The thermostatic mixing valve controls the outlet hot water temperature delivered to the faucets.

⚠ WARNING

POTENTIAL SCALD HAZARD. The mixing valve must be installed on the Excellence. Removal of the mixing valve will create a potential scald hazard resulting in severe personal injury or death.

If any adjustment needs to be made on the valve:

- Use a L-Key to remove the set screw securing the knob to the valve.
- Remove the knob and lock ring from the valve.
- Replace the knob and adjust the set temperature of the valve to the desired temperature.

NOTICE

To calibrate the outlet temperature, allow the water to run for approximately 2 minutes and measure the water with a thermometer. To adjust the valve setting, rotate the knob clockwise to decrease the water temperature or counter-clockwise to increase the water temperature.

- Once the desired temperature is achieved, remove the knob and refit the lock ring onto the valve's "Mix" marking.
- Locate the tab on the inner face of the knob into the retainer in the locking ring. Secure the knob with set screw.

DANGER

HOT WATER CAN SCALD!

- Water temperatures over 125ºF can cause severe burns instantly, or death from scalds.
- Feel water before bathing or showering.
- Consumer Product Safety Commission and some states recommend temperatures settings of 130ºF or less. Setting thermostat higher than 130ºF will increase risk of scald injury and cause severe personal injury or death.
- Water heated to a temperature suitable for clothes washing, dish washing and other sanitizing needs will scald and cause permanent injury.
- Children and elderly, infirm, or physically handicapped persons are more likely to be injured by hot water. Never leave them unattended in or near a bathtub. If anyone using hot water in the building fits this description, or if state laws or local codes require certain water temperatures at hot water faucets, take special precautions.
  - Install the factory supplied automatic mixing valve at water heater and/or install a point of use mixing valve at each hot water faucet, bath and shower outlet. Selection and installation of point of use mixing valves must comply with valve manufacturer's recommendation and instructions.
  - Use the lowest practical temperature setting.
  - Check water temperature after any adjustment of the mixing valve.

General Notes

- Household water usage patterns will affect water temperature at any faucet or shower. Occasionally check temperature at each point of use, then adjust the mixing valve setting accordingly. Always recheck temperature after adjusting the mixing valve.
- Lowering the automatic mixing valve as indicated in these instructions will reduce water temperature levels. Consult your installer or service technician.

Important Information - Read Before Proceeding

⚠ WARNING

This document is intended to be used by a factory trained and qualified heating contractor or service technician only. Read all instructions within this document and within the PRESTIGE Excellence Boiler Installation and Maintenance Manual, before proceeding. It is recommended to follow the procedures in the steps given, skipping or missing procedural steps could result in severe personal injury, death or substantial property damage.

Program Access of the MCBA CONTROL

To adjust the factory parameter setting of the Prestige MCBA Control, the installer must enter into the Parameter menu of the control.

⚠ WARNING

Do not attempt to revise any other control parameter setting except those listed in this supplement. Perform only those parameter revisions described in this supplement. Failure to comply could result in erratic or unreliable operation of the Prestige resulting in severe personal injury, death or substantial property damage.

NOTICE

For additional information on revising the Prestige MCBA Control Module operational parameter settings, reference the Prestige Control Supplement.

Activating the Access Code

To enter the parameter listing of the MCBA control, the installer must enter the service code as follows:

1. Press and hold the MODE button
2. Continue holding the MODE and press STEP button until STBY appears and hold both STEP and MODE buttons for 2 to 3 seconds.

   The display should read CODE
3. Release the STEP and MODE buttons on the control panel.
4. Press STEP once.

   The display should read C_XX (XX should be a random number from 00 to 99)
5. Press the + or - button to change the display number C_XX to read C_54. Press and release the + or - to change the display one number at a time. Press and hold the + or - to rapidly change the display number.
6. When the display reads C_54 press STORE to save the service code. The display C_54 should flash when the code is entered and saved.

After the service code is entered press the MODE button until the display shows PARA. At this point the installer can access the parameters required for application.

Once in the parameter mode, press the STEP repeatedly to reach the appropriate parameter setting. The display should show the following sequence, as the STEP button is press repeatedly:

Press STEP once- 1148
Press STEP x2 - 2_01
Press STEP x3 - 3_01
Press STEP x4 - 4186

Press STEP x5 - P_18

Press STEP x6 - P_11

Etc.....

After Parameter 4 the display will show P followed by a two-digit number that increases with each press of the STEP button.

NOTICE

The actual parameter values displayed on the unit may vary depending on the application. The parameter sequence will always occur in the order shown.

Once a particular parameter is reached, release the STEP button. Wait a second and the display will show the current setting for that parameter in the right two display digits.

To Change a Parameter Setting

Use the + or - button to change the value of the display.

Press the STORE button once to save the change.

⚠ WARNING

If a parameter setting is changed from the factory default and the STORE button is not pressed to save the setting, the MCBA module will automatically store the setting after 15 minutes. Ensure all parameters settings are either factory default or revised based on the application. Review all parameters settings on page 18 when completed and prior to commission of the boiler. Failure to comply could result in erratic or unreliable operation of the Prestige boiler.

NOTICE

Once a parameter setting value has been revised and stored, if the STEP button is pressed for the next parameter setting the value setting of that parameter will appear. The display will not show P_XX of the next sequential parameter. The sequence of parameters may be scrolled through, as the display will roll over from parameter 46 to parameter 1.

BEST PRACTICE

If sequential parameters are being revised and since the display will not show P_XX of the sequential parameter, it is recommended to press and hold the STEP button to scroll through the entire list of parameters before making any additional changes to avoid any potential confusion.

DHW Storage Temperature Setting

The parameter setting for the DHW storage temperature is Parameter 1 and is accessible without having to enter the service code.

To revise the parameter setting within the Prestige Control Module for the set point of the Domestic Storage temperature, the installer can access the parameter setting by entering the Parameter Mode PARA during normal operation, the service code is not required.

Parameter	Factory Setting	Minimum Setting	Maximum Setting
1	140ºF	68ºF	150ºF

1. Press MODE once until the display shows PARA.
2. Press STEP until the display shows 1140 or 1XXX (where XXX is a setting other than the factory setting).
3. Press the + or - button until the desired DHW storage temperature setting is achieved. Press STORE to save the setting. The display will flash when the revised setting is accepted.

Setpoint Value Addition for DHW

To achieve the boiler operating temperature during a DHW request for heat, the MCBA Control uses Parameter 1 and a second parameter, Parameter 21 Setpoint Value Addition for DHW. Parameter 1 plus Parameter 21 will establish the boiler operating temperature limit.

If Parameter 1 is set below 134ºF, it is recommended that Parameter 21 be reset to a higher setting. The request for DHW is based on the temperature reading of the DHW sensor and its relationship to Parameter 1. The operating boiler temperature setpoint is based on Parameter 1 plus Parameter 21 with a maximum operating temperature of 194ºF.

To revise the parameter setting within the Prestige Control Module for the Setpoint Value Addition for DHW, the installer must activate the service code for the control module as previously described in the Program Access of the MCBA section.

1. Enter into the service code mode.
2. Once the service code has been entered and accepted, press MODE until the display shows PARA.
3. Press STEP until the display shows P_21. This parameter setting is the Setpoint Value Addition for DHW parameter. After releasing the STEP button the display will show the current setting.

Parameter	Factory Setting	Minimum Setting	Maximum Setting
21	46ºF	00ºF	54ºF

4. Press the + or - button until the desired setting is achieved. Press STORE to save the setting. The display will flash when the revised setting is accepted.
5. Once the desired parameter setting has been revised and stored within the Prestige Control module, press RESET to exit the CODE mode.

DHW ON Differential

The MCBA Control Module has 2 differential settings for the burner operation. The first differential setting the installer has the option of adjusting, is Parameter 38 DHW ON Differential. This parameter sets the DHW storage temperature low limit. The burner operation will respond when the DHW storage temperature drops below Parameter 1 minus Parameter 38 setting.

A minimum DHW ON Differential parameter setting will create a quicker burner operation response to any domestic water draws from the Excellence tank. In contrast, a maximum DHW ON Differential setting will result in a delay response to domestic draws.

⚠ DANGER

The DHW ON Differential setting of Parameter 38 greatly affects the production of domestic hot water. A minimum setting of Parameter 38 could result in a rapid response to a DHW request for heat resulting in a potential scald hazard. It is strongly recommended that the installer utilize the factory supplied thermostatic mixing valve on the DHW outlet of the Excellence. Failure to comply could result in severe personal injury, death or substantial property damage.

To revise the parameter setting within the Prestige Control Module for DHW ON Differential control, the installer must activate the service code for the control module as previously described in the Program Access of the MCBA section.

1. Enter into the service code mode.
2. Once the access code has been entered and accepted, press MODE until the display shows PARA.
3. Press STEP until the display shows P_38.. This parameter setting is the DHW ON Differential parameter. After releasing the STEP button the display will show the current setting.

Parameter	Factory Setting	Minimum Setting	Maximum Setting
38	02°F	(-)6°F	54°F

4. Press the + or - button until the desired setting is achieved. Press STORE to save the setting. The display will flash when the revised setting is accepted.
5. Once the desired parameter setting has been revised and stored within the Prestige Control module, press RESET to exit the CODE mode.

DHW OFF Differential

The second differential setting is Parameter 39 DHW OFF Differential. This parameter sets the DHW storage temperature high limit. The burner operation will cease when the DHW storage temperature rises above Parameter 1 plus Parameter 39.

A maximum DHW OFF Differential parameter setting will result in an extended burner firing cycle when responding to any domestic water draws from the Excellence. This extended burner firing cycle could result in a final storage temperature of the domestic hot water that is higher than the desired storage temperature setting.

⚠ DANGER

The DHW OFF Differential setting of Parameter 39 greatly affects the production of domestic hot water. A maximum setting of Parameter 39 could result in an excessive domestic storage temperature resulting in a potential scald hazard. It is strongly recommended that the installer utilize the factory supplied thermostatic mixing valve on the hot water outlet of the Excellence. Failure to comply could result in severe personal injury, death or substantial property damage.

To revise the parameter setting within the Prestige Control Module for DHW OFF Differential control, the installer must activate the service code for the control module as previously described in the Program Access of the MCBA section.

1. Enter into the service code mode.
2. Once the access code has been entered and accepted, press MODE until the display shows PARA.
3. Press STEP until the display shows P_39. This parameter setting is the DHW OFF Differential parameter. After releasing the STEP button the display will show the current setting.

Parameter	Factory Setting	Minimum Setting	Maximum Setting
39	06ºF	(-)36ºF	54ºF

4. Press the + or - button until the desired setting is achieved. Press STORE to save the setting. The display will flash when the revised setting is accepted.
5. Once the desired parameter setting has been revised and stored within the Prestige Control module, press RESET to exit the CODE mode.

Additional DHW Features

Frost Protection

Through the use of the IDWH sensor, the Prestige Excellence Control module will now provide a Frost Protection feature to the water heater.

The Frost Protection feature is designed to protect the Excellence water heater from a potential freeze up. The protection is activated once the IDWH sensor records a domestic temperature below 38ºF. At that time the Prestige Excellence will begin the burner function at low input, the circulator will begin circulating and the internal 3-way valve will open. The burner will continue operating at minimum input with circulator energized until the sensor senses a domestic water temperature above 50ºF. At that point the boiler will shut down the burner function and circulator. This feature is always active even if the DHW operation is in the OFF mode and cannot be overridden.

Troubleshooting

Error Codes

b_38 alternating with a status code of 9

The IDWH Sensor is not properly connected to the Prestige low voltage terminal strip. Check for proper connections and proper terminals

b_33 alternating with a status code of 9

The IDWH Sensor is short-circuited. Check for proper connections to the Prestige low voltage terminals.

Once the condition is corrected, the errors will automatically reset and the Prestige Excellence will return to normal operation.

FACTORY SETTING FOR PARAMETERS

1	140ºF	DHW Setting
2	01	DHW Application Selection
3	01	CH Application Selection
4	186ºF	CH Maximum Boiler Operating Setpoint
10	86ºF	CH Minimum Boiler Operating Setpoint
11	00ºF	CH Reset Curve Coldest Day
12	64ºF	CH Reset Curve Warmest Day
13	-22ºF	Frost Protection Setpoint
15	122ºF	2nd Circuit Maximum Operating Setpoint
16	68ºF	2nd Circuit Minimum Operating Setpoint
17	10ºF	2nd Circuit "ON" Differential
18	32ºF	CH Block Temperature Setting
19	00 Minutes	Boost Feature Setting
20	00ºF	Parallel Shift Value
21	46ºF	Setpoint Value Addition for DHW
32	01 Minutes	CH Circulator Post Pump Time Period
33	03 x 10.2 Sec.	DHW Circulator Post Pump Time Period
38	02ºF	DHW "ON" Differential
39	06ºF	DHW "OFF" Differential
40	03 x 10.2 Sec.	CH Call Blocking Time
41	00 x 10.2 Sec.	DHW Call Blocking Time
42	00 x 10.2 Sec.	DHW to CH Call Blocking Time Setting
43	0 Minutes	DHW Priority Timeout
45	00	CH Operating Signal Selection
46	02	DHW Operation Signal Selection

Maintenance Schedule

Annual service by qualified service technician should include the following:

- ☐ Any procedure required by local codes.
- ☐ Check air vent operation.
- ☐ Verify system pressure. Air venting procedure may require adding water to bring system up to pressure, typically 12 psig.
- ☐ Manually operate T&P relief valve at least once a year. This will release some hot water.

⚠ WARNING

Before operating T&P relief valve, make sure no one is in front of or around T&P relief valve discharge piping. Hot discharge water can cause severe personal injury or substantial property damage.

- ☐ Move operating lever to open position for a few seconds and then move it back, allowing it to snap closed. After T&P relief valve is operated, if it continues to release water, close cold water inlet to water heater immediately. Follow draining instructions, and replace T&P relief valve. If T&P relief valve weeps periodically, it may be due to thermal expansion see Thermal Expansion, page 6. Do not plug T&P relief valve or discharge piping.

⚠ WARNING

Plugging T&P relief valve or discharge piping can cause excessive pressure in water heater, resulting in severe personal injury, death, or substantial property damage.

- ☐ Follow instructions on circulator to oil it, if required.
- ☐ Check mixing valve, valves, pipes and fittings for leaks.
- ☐ Check function of field-installed controls and valves. See component manufacturer's instructions.
- ☐ Review homeowner's maintenance responsibilities and their frequencies, including any not listed in the following section.

Homeowner monthly maintenance to include:

- ☐ Check air vent operation.
  - Automatic air vent - remove cap. Briefly push in valve and release it to clean valve seat. Screw cap on completely, then unscrew one full turn. If air vent does not operate, call qualified service technician.
- ☐ Visually check valves, pipes and fittings for leaks. Call qualified service technician to repair leaks.

Filling Water Heater

See "Filling the Outer (Boiler Water) Tank" and "Filling the Inner (Domestic Water) Tank on page 11.

Draining Water Heater

Drain water heater if it will be shut off and exposed to freezing temperatures. Freezing water will expand and damage water heater.

- If boiler water contains sufficient antifreeze, then only the domestic water needs to be drained.

⚠ WARNING

Close boiler water isolation valves and relieve system pressure to below 15 psig in outer tank before draining inner tank to prevent damage to inner tank.

- If boiler water does not contain sufficient antifreeze, then the boiler water and domestic water must be drained.

If antifreeze is used in boiler water, check concentration. Boiler water (including additives) must be practically non-toxic, having toxicity rating or class of 1, as listed in Clinical Toxicology of Commercial Products. A maximum 50/50 mixture of inhibited propylene glycol is recommended. Follow antifreeze manufacturer's instruction.

⚠ WARNING

Do not use automotive, ethylene glycol or petroleum-based antifreeze. Do not use any undiluted antifreeze. This can cause severe personal injury, death or substantial property damage.

⚠ WARNING

Water from opened drain valves, unions and other connections may be extremely hot. To avoid severe personal injury, death or substantial property damage:

- **Tighten all drain hose connections.**
- **Direct hot water away from all persons.**

Draining Outer (Boiler Water) Tank

1. Disconnect power supply to water heater.
2. Close boiler water isolation valves between boiler and water heater.
3. Connect hose to boiler water drain valve at water heater. Open and drain water to a safe place.
4. To speed draining procedure, loosen air vent on top of tank.
5. When draining is complete, close drain valve and retighten air vent.

Draining Inner (Domestic Water) Tank

(See Domestic Piping Fig. 4 page 9)

1. Disconnect power supply to water heater.
   - If outer (boiler water) tank pressure is greater than 15 psig, relieve boiler pressure and close isolation valves before proceeding.
2. Close system supply isolation valve.
3. Connect a hose to domestic water drain valve at cold water inlet. Hose should extend to drain at floor level to allow siphoning of domestic water tank.
4. Open hot water faucet at highest point above heater.
5. Open domestic water drain valve to start siphoning.
6. When draining is complete, close hot water faucet and domestic water drain valve.

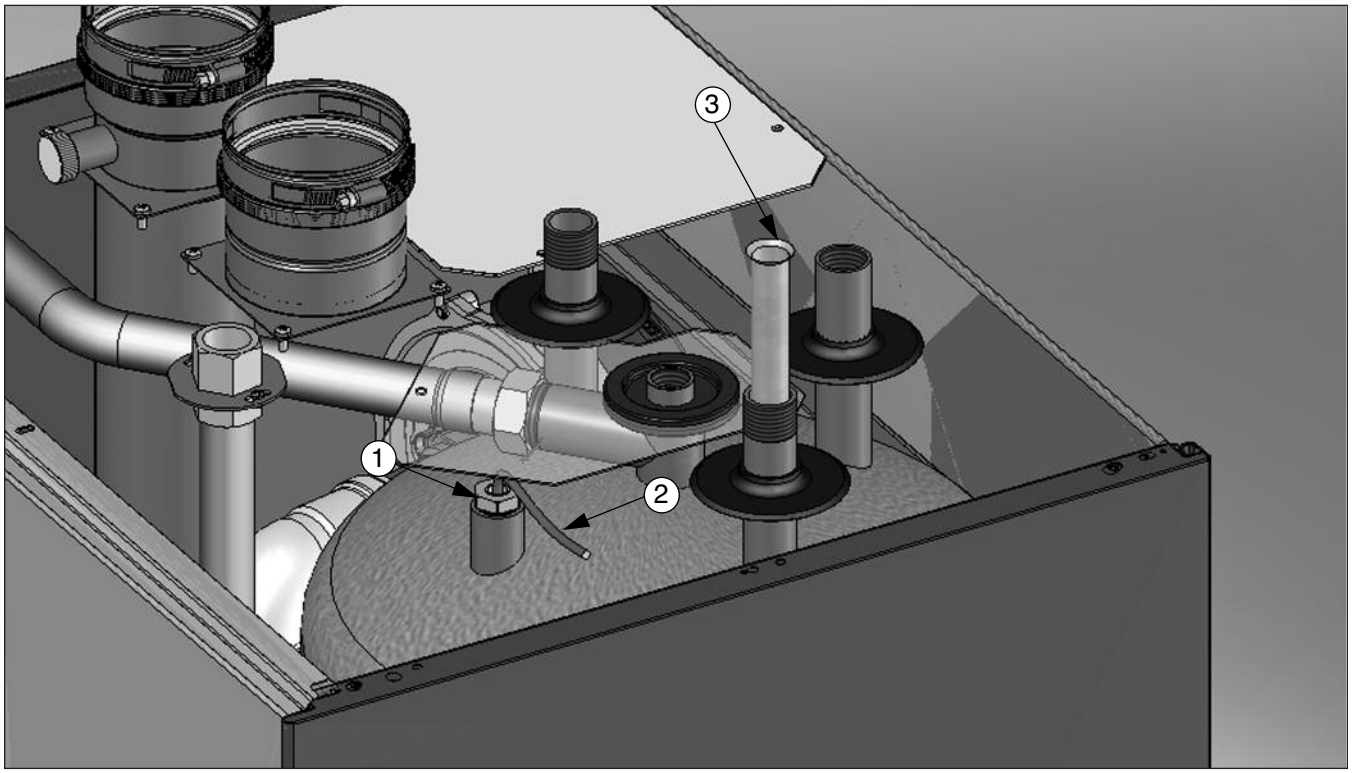
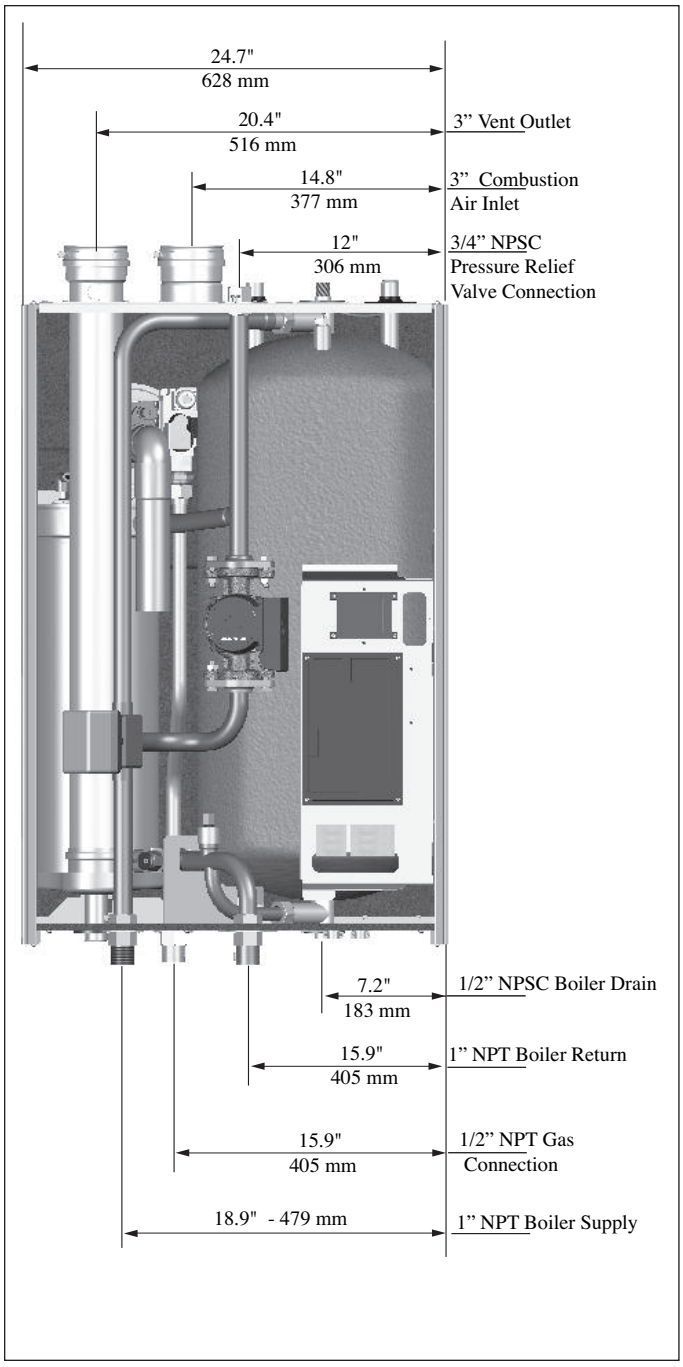
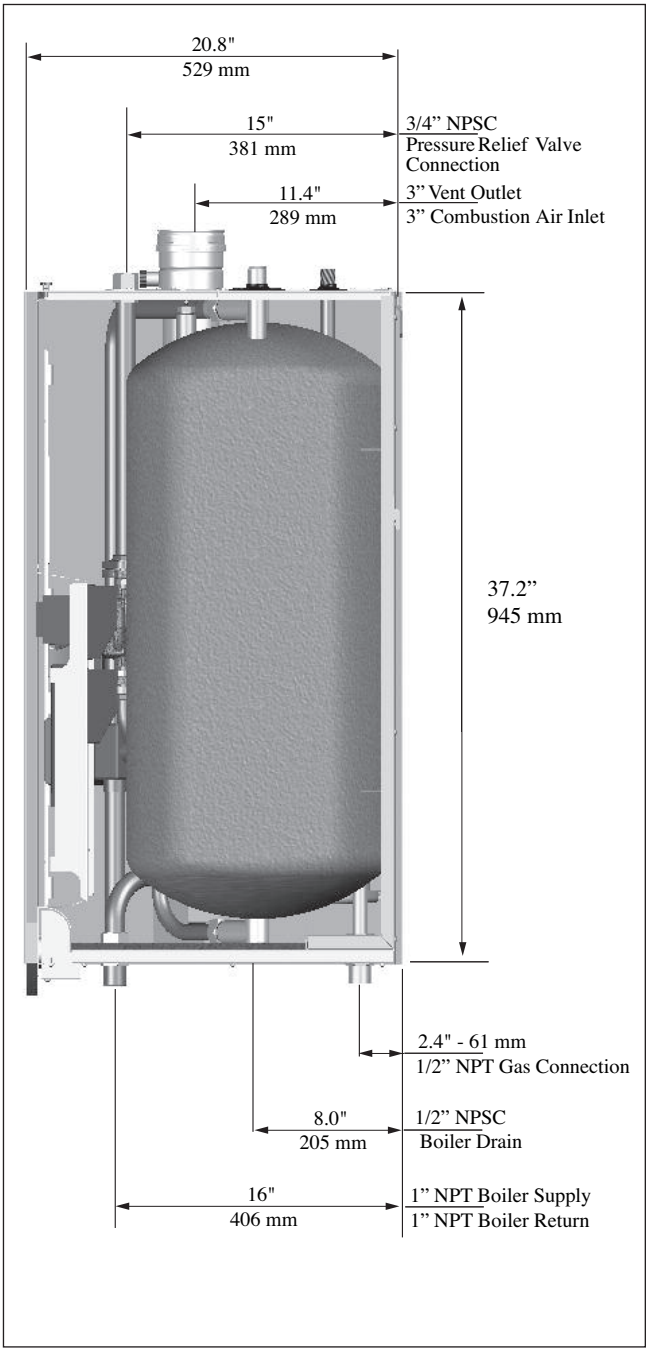


Fig. 7: Excellence Domestic Components

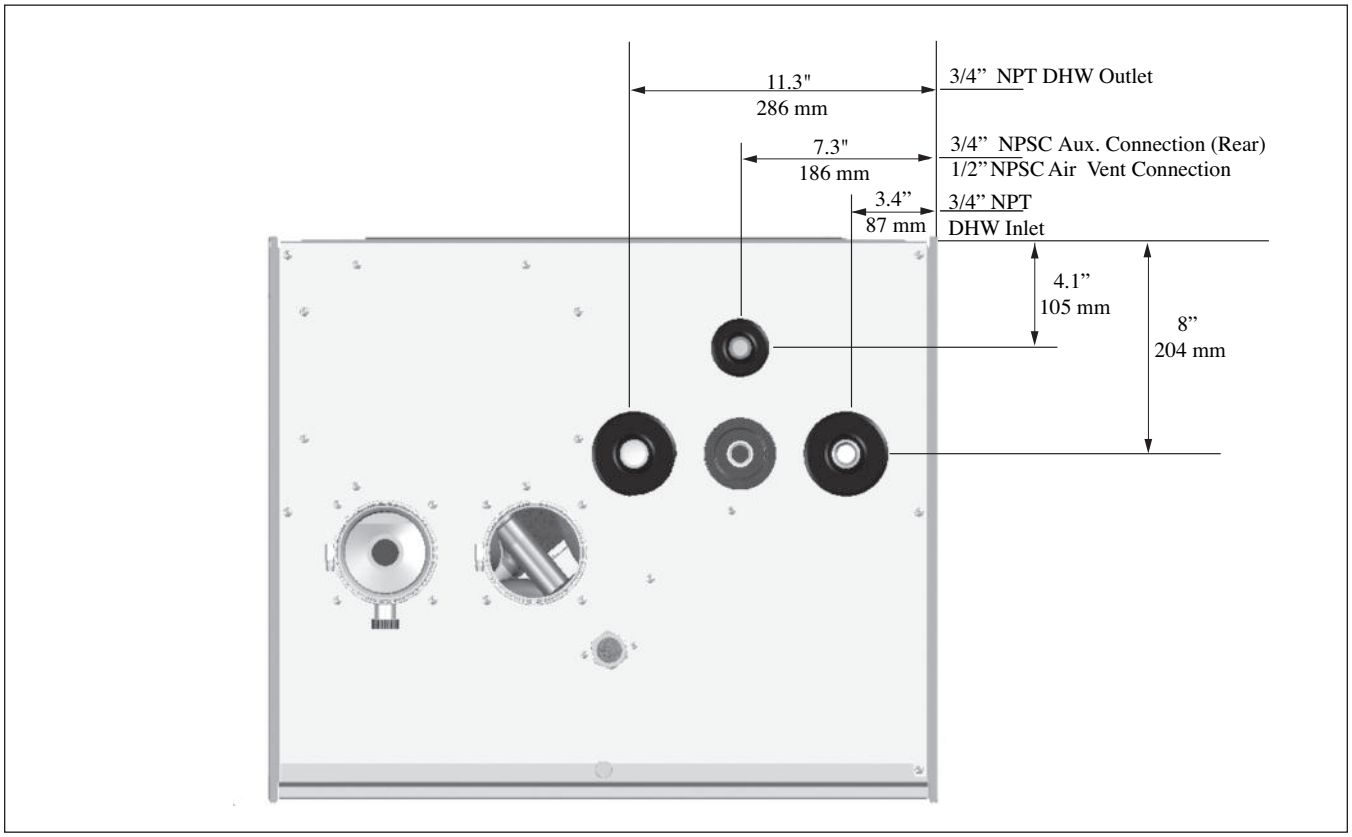
Part	Description	Part Number
1	Drywell	P3DW05
2	NTC 3 DHW Water	PSRKIT63
3	Dip Tube	P3WKITDT01



Front View



Side View



Top View

Performances

Model	Domestic Storage Volume Gal.	Peak Flow Gal./ 10 Min.	1st Hour Flow Gal./ Hour	Continuous Flow Gal./ Hour
Excellence 110	14	55	210	180
Conditons: 50°F Domestic Cold Water Inlet Temperature 120°F Domestic Hot Water Outlet Temperature When Factory Supplied Mixing Valve is Installed 186°F Boiler Water Supply Temperature				

Additional quality water heating equipment available from: **Triangle Tube**

Smart Indirect Fired Water Heaters

- Exclusive Tank-in-Tank design
- Stainless steel construction
- Available in 8 sizes and 2 models
- Limited LIFETIME residential warranty
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TTP Brazed Plate Heat Exchangers

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- Plates made of stainless steel, with a 99.9 % copper and brazed, ensuring a high resistance to corrosion
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- Available in capacities from 25,000 BTU/hr to 5,000,000 BTU/hr
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Maxi-flo Pool and Spa Heat Exchangers

- Construction of high quality corrosion resistant stainless steel (AISI 316)
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- Available in 5 sizes that can accommodate any size pool or spa

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